1900.
NEW ZEALAND.

THE GOLDFIELDS OF NEW ZEALAND:

REPORT ON ROADS, WATER-RACES, MINING MACHINERY, AND OTHER WORKS IN CONNECTION WITH MINING.

Presented to both Houses of the General Assembly by Command of His Excellency.

INDEX.

	Page.
Accidents 39, 93, 96, 99, 104	
Alluvial Mining—	
Marlborough, Nelson, and West Coast ..	97
Otago and Southland	31, 101
Battery Superintendents, Holders of Certificates	164
Cinnabar	52
Dredging (Gold)	40, 99, 103
Marlborough, Nelson, and West Coast ..	99
Otago and Southland	103
Engine-drivers, Holders of Certificates ..	165
Examination Papers—	
Battery Superintendents	58
Mining Managers (Coal Mines Act) ..	60
Mining Managers (Mining Act)	55
Gold and Silver Production	20
Gold-dredging	40, 99, 103
Gold Purchased by Banks	175
Hydraulic Mining—	
Marlborough, Nelson, and West Coast ..	97
Otago and Southland	31, 101
Introduction	1
Inspectors of Mines (Reports)—	
Mr. Coutts, Thames	69
Mr. Green, Dunedin	100
Mr. Tennent, Westport	93
Mine Managers, Holders of Certificates, Mining and Coal-mines Acts	161–164
Modern Mine-haulage Practice	64
Oil Shale	52
Plates	220
Prospecting for Gold	3
Quartz-mining	21
English Companies	21
Otago and Southland	23
Inspectors' Reports	69, 93, 100
Machines employed	166–169
Quartz crushed, and value	170–174
Reports of Inspectors of Mines—	
Mr. Coutts, Thames	69
Mr. Green, Dunedin	100
Mr. Tennent, Westport	93
Reports of Managers of Water-races—	
Mr. Aitken, Kumara	153
Mr. Murray, Naseby	158
Report of Engineer for Water Conservation ..	159
Reports of Wardens (*see* Wardens)	
Scheelite	52
Schools of Mines—	
Coromandel	12
Nelson	16
Otago	20
Reefton	17
Thames	3
Schools of Mines—*continued.*	
Waihi	13
Expenditure on Schools	20
Simultaneously deepening and lining a colliery shaft	67
Statistical tables	166–220
Gold Duty	203
Gold Exported, 1857–1859	204
Gold Exported, Comparative Return, Years 1898 and 1899	204
Gold Exported, Comparative Return, Quarters 31st March, 1899, and 31st March, 1900 ..	205
Gold Exported, 1857 to 31st March, 1900 ..	205
Gold-fields Revenue, Quarter ending 31st March, 1900	201
Gold-fields Revenue, Comparative Return, Quarters 31st March, 1899, and 31st March, 1900	201
Gold-fields Revenue, Comparative Return, 1898 and 1899	202
Gold-fields Revenue, Comparative Return ..	203
Gold-fields Revenue, Year ending 31st December, 1899	200
Gold purchased by Banks	175
Machines Employed	209
Mining Leases	212
Price of Gold, &c.	206
Prices of Provisions	207
Quartz Crushed	170–174
Quartz-crushing Machines	166–169
Rates of Wages	208
Statement of Affairs of Mining Companies ..	213–220
Summary of Works Constructed	175–178
Wardens' Court cases	211
Water-races, &c.	210
Water-races, Results of Working	199
Works completed on 31st March, 1900 ..	184–198
Works in progress on 31st March, 1900 ..	179–183
Subsidised Roads and Tracks ..	2, 179, 198
Wardens' Reports—	
Mr. Allen, Blenheim	118
Mr. Bush, Thames	109
Mr. Dalgleish, Naseby	146
Mr. Hawkins, Greymouth	121
Mr. Hutchison, Auckland	109
Mr. McCarthy, Clyde	148
Mr. McFarlane, Hokitika	138
Mr. Poynton, Invercargill	152
Mr. Roberts, Tauranga	118
Mr. Stratford, Dunedin, Lawrence, &c. ..	144
Mr. Wilson-Heaps, Nelson	119
Water Conservation	159
Water-races	153

ERRATA.

On page 42, paragraph 2, line 12, *for* "impossible," ***read*** unavoidable.
" 82, Wharekawa District *for* Whangamata Gold Co-operation, Limited, *read* Whangamata Gold Corporation, Limited.

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Mr. JOHN HAYES, F.S.Sc., Inspecting Engineer, to the Hon. JAMES MCGOWAN, Minister of Mines.

SIR,— Mines Department, Wellington, 21st April, 1900.

I have the honour to present my first report as Inspecting Engineer to the Mines Department for the year ending the 31st March. My appointment to this position dates from the 1st November last. Prior to that date a considerable portion of my time was taken up by special work in various parts of the colony. In consequence of this, my work as Inspector of Mines for the southern district naturally fell into arrears, and on my appointment as Inspecting Engineer it was deemed advisable for me to spend some time in Otago and Southland owing to several matters of importance having arisen which demanded my personal attention. Mr. E. R. Green, formerly manager to the Freeman's Coal Company, Abbotsford, having been appointed my successor at Dunedin, advantage was taken of my visit to the southern district to initiate Mr. Green into his duties generally.

Owing to the circumstances referred to, and also to the fact of my having been appointed a member of a Commission to inquire into the question of the proclamation of certain rivers and streams in Otago and Southland as tailings-channels for mining purposes, and the various issues connected therewith, I have not been able to visit the mining centres of the North Island at all, and only to make a visit to the West Coast district on matters of a special character. The investigations of the said Commission having to be undertaken at a time which, under ordinary circumstances, would be occupied in the preparation of the annual report, altogether precludes the possibility of my presenting so lengthy and elaborate a document as that of previous years.

For details connected with the mining industry of the North Island and West Coast Mining Districts I have to refer to the reports of the Inspectors of Mines and Wardens for those districts and to that of the manager of the Government water-races at Kumara.

SUBSIDISED ROADS AND TRACKS.

The expenditure (as subsidies) authorised and the liabilities on outstanding authorities for the year ending the 31st March, 1900, are as follows:—

Name of Local Body.	Expenditure for the Year ending 31st March, 1900.	Liabilities on Authorities on 31st March, 1900.
	£ s. d.	£ s. d.
Coromandel County	340 0 0	980 0 0
Thames County	...	298 8 0
Thames Borough	120 0 0	380 0 0
Ohinemuri County	58 6 3	48 6 0
Katikati Road Board	...	5 1 3
Piako County	237 0 0	290 0 0
Matamata Road Board	...	100 0 0
Picton Road Board	...	16 0 0
Pelorus Road Board	...	30 0 0
Collingwood County	...	350 0 0
Waimea County	219 14 4	280 5 8
Buller County	...	625 0 0
Inangahua County	150 0 0	...
Grey County	...	251 0 0
Westland County	18 0 6	29 3 6
Tuapeka County	450 0 0	8 16 6
Vincent County	...	100 0 0
Cromwell Borough	100 0 0	...
Lake County	1,100 0 0	1,119 0 0
Contingencies	45 17 6	...
Totals	2,838 18 7	4,911 0 11

ROADS CONSTRUCTED BY DIRECT GRANTS.

The following statement shows the expenditure and liabilities on authorities issued on roads from direct grants to the several local bodies during the year ending the 31st March, 1900:—

Name of Local Body.	Expenditure for the Year ending 31st March, 1900.	Liabilities on Authorities on 31st March, 1900.
	£ s. d.	£ s. d.
Whangarei County	100 0 0	...
Coromandel County	4,824 14 4	4,235 0 0
Thames County	2,209 9 4	3,779 14 2
Thames Borough	200 0 0	...
Ohinemuri County	2,171 1 6	2,961 3 9
Piako County	425 0 0	275 0 0
Te Aroha Borough	250 0 0	...
Tauranga County	1,045 2 6	1,167 0 0
Picton Road Board	20 0 0	30 0 0
Pelorus Road Board	126 3 6	727 0 0
Wairau Road Board	488 1 2	611 18 10
Collingwood County	2,205 1 6	1,959 12 6
Waimea County	392 15 7	1,307 4 5
Buller County	3,900 0 0	3,500 0 0
Inangahua County	2,568 8 4	1,905 9 8
Grey County	2,858 0 6	2,346 4 0
Westland County	799 15 4	2,477 7 0
Taieri County	75 0 0	400 0 0
Bruce County	...	280 0 0
Tuapeka County	1,350 0 0	925 0 0
Vincent County	750 0 0	650 0 0
Lake County	750 0 0	950 0 0
Southland County	...	1,200 0 0
Knapdale Road Board	100 0 0	...
Wallace County	123 9 5	126 10 7
Lands and Survey Department	11,462 1 8	3,896 0 7
Public Works Department...	6,005 7 11	6,399 16 10
Totals	45,199 12 7	42,110 2 4

PROSPECTING FOR GOLD.

The following statement shows the expenditure and liabilities on authorities issued in subsidies to prospecting associations and parties of miners recommended by the local bodies in the different counties for the year ending the 31st March last:—

Name of County.	Expenditure for Year ending 31st March, 1900.	Liabilities on Authorities on 31st March, 1900.
	£ s. d.	£ s. d.
Bay of Islands	...	200 0 0
Coromandel	48 10 0	172 1 0
Buller	33 10 0	104 0 0
Inangahua	7 5 0	1 15 0
Grey	105 15 0	186 5 0
Westland	1,205 9 6	1,033 15 0
Tuapeka	...	86 7 0
Totals	1,400 9 6	1,784 3 0

SCHOOLS OF MINES.

The schools at Thames, Coromandel, and Waihi, in the North Island, and at the Otago University, Dunedin, continue to do good work. The classes are well attended, and the instruction given is a great help to those who are preparing themselves for examination for certificates as mine-managers and battery-superintendents.

The school at Reefton was closed for some time owing to general indifference and financial difficulties. Some aid having been promised by the Government to the local committee, conditional upon the school being kept regularly open for a specified term, classes have been commenced, Mr. J. W. Lee being the instructor.

Reports of the year's work at the several schools have been furnished by the several directors, and are as follow:—

THAMES SCHOOL OF MINES.

Mr. F. B. Allen, M.A., B.Sc., Director, reports as follows:—

The school continues to be well attended by those working in the mines and batteries. Much useful work has been accomplished during the last year, and another of our students has carried off a School of Mines University scholarship.

Although the experimental plant has not been continuously at work, a fair number of test-parcels have been successfully treated for the public; and the metallurgical students have had many opportunities of gaining a practical knowledge of battery-work.

There have been no changes in the teaching staff. The duties of Assistant Lecturer and Assayer have been ably and zealously discharged by Mr. W. H. Baker, B.Sc., who has performed his work entirely to my satisfaction, and has proved himself a painstaking and successful teacher. Mr. Baker was a former student of this school, and a winner of a School of Mines scholarship. In 1899 he obtained his B.Sc. degree, and has just gained at the New Zealand University examinations first-class honours in science (chemistry). Mr. E. J. Williams, drawing master, has maintained a large attendance at his classes, and has performed his duties in an able and highly efficient manner.

Mechanical drawing and machine design, bearing chiefly on the machinery used in connection with mining and battery-work, is the class of work done by most of the students; but a few of them take architectural drawing and design. Many excellent drawings have been produced by students during the year.

Mr. W. J. Cole has been employed as amalgamator and cyanider in the experimental plant, and has given every satisfaction.

The average number of registered students attending the classes was sixty-eight, about the same as last year. The average number of individual students was 113. Although the scarcity of work in this district militates against large attendances, still the school has been comfortably full of students; and it is rather a matter for surprise that, notwithstanding the lack of employment during the last year or two, the attendance has kept so high.

The following shows the number of assays made for the public during the last twelve months:—

Number of public assays	211
Number of assays for experimental plant	240
Total assays	451

All public assays are made in duplicate in the separate assay-room built for this department of the school-work. To insure accuracy all assays are performed by the staff of the school, and no students are allowed to take part in the work. Samples of the separate parcels forwarded for assay are kept for a period of twelve months, after which they are thrown out; but, in view of the fact that check-assays from these samples are never asked for, this precaution seems unnecessary.

In conformity with the practice of the banks here, the value of the bullion is reckoned on the basis of—Gold, £4 per ounce; silver, 2s. per ounce; and this custom has been carried out in the tabulated statement of the ores treated in the experimental plant. Thirty parcels, of an aggregate weight of 32¼ tons, have been treated in the battery attached to the school—namely, fifteen parcels, weighing 50,100 lb., were treated by pan-amalgamation; eleven parcels, weighing 20,810 lb., by the cyanide process; and four others, of a total weight of 1,170 lb., passed through the berdan. The average percentage extractions were 87·1 of the value by amalgamation, and 73·5 by the cyanide process. These extractions, owing to the different nature of the ore forwarded for treatment, are higher than usual, and there has been an increase in the number of parcels of ore which could be successfully treated by cyanide. The receipt of several rich parcels has made the total value of bullion recovered—namely, £834—much higher than usual, the richest ores being those from Gumtown and Omahu, containing large quantities of silver-sulphides, and a rich mispickel ore from Coromandel. The whole of the bullion saved by the different processes has been returned to the respective owners of the parcels.

Appended hereto is a tabulated statement showing the method of treatment, percentage extraction, and other details relating to the separate parcels treated in the experimental plant.

Several additions and alterations have this year been made to the school-buildings, which are now the most extensive of any school of mines in the colony. An office and store-room have been built between the main building and the battery, and have proved very useful and convenient. The office was very much needed for the proper conduct of that part of the business of the school which lies outside of the teaching department, and the store-room has greatly relieved the previous overcrowding of the school class-rooms with assay materials, mineral samples, &c.

During January the metallurgical plant was overhauled and various necessary repairs executed, notably the renewal of the drying-furnace, which has been supplied with a new hearth and bridge, and is now again in good working-order.

The most noteworthy addition is the museum building, with a frontage to the Beach Road. It has been well built upon a broad concrete foundation, is 60 ft. in length, 25 ft. in breadth, and its appearance reflects credit upon the architect and builder. Gas has been laid on, and it is the intention of the Council to throw the museum open to the public at stated times during the day and evening. In accordance with plans and specifications drawn up by myself, some 70 ft. of wall show-cases, standing 7 ft. high, have been placed in the museum. These cases, which are ebonized outside and painted grey inside, have been provided with sloping and sliding shelves for the easy display of the exhibits, and have been built dust-proof; they contain 800 running feet of shelf-room, and I have just commenced the preparation of the necessary samples of rocks and minerals to fill the shelves. Already about a thousand samples of different kinds, as well as a number of models illustrating mining machinery and underground workings, have been placed in the museum, and I have more in readiness. The collection of suitable samples, their labelling and classification, will occupy much time, and, as the school staff is already fully occupied in other work, the museum will not be opened to the public view for several months. When fairly well stocked the museum should prove extremely useful to the prospector, the student, and the mining community generally. The Council deserve the thanks of the public for carrying the idea of a museum into execution, for the gathering-together of samples of the country-rock, the vein-stones and the minerals associated with the gold in this district, as well as the collection of similar specimens from other parts of the colonies, must prove of great benefit and assist in the further search for the precious metal. Already numerous samples have been donated to the school, and no doubt by gifts and exchanges from time to time the store of samples will gradually increase, and finally form a valuable collection. It is the immediate intention of the Council to build a series of centre show-cases to stand along the middle line of the building.

A picket-fence has been erected along the front and side of the museum building; the remainder of the old fence has been repaired, and a new cart-bridge has been laid down for the more convenient cartage of ore into the battery.

The general work of the school has been carried on as in previous years. While devoting due attention to theoretical work in the classes, I have endeavoured as far as possible to give prominence to the practical side of each subject, and the proximity of the mines and batteries is of invaluable assistance in this direction. Many excursions into the mines and across country have been made with the mining-geology classes, and much practical knowledge has been thereby gained by the students. Regular practice is taken each week in surveying, and the use of the instruments used in land- and mine-surveying thoroughly explained in the field. A new 4 in. Y theodolite has lately been acquired for the use of this class.

A number of the students in the metallurgy, assaying, and chemistry classes have throughout the year availed themselves of the opportunities afforded them of gaining practical experience in ore-treatment in the school experimental plant. The treatment of trial parcels of ore for the public is conducted under my personal supervision, and all the assays, valuation of bullion, and laboratory experiments are made by the staff of the school; but when no test for the public is in progress the students are allowed to run a parcel through the battery themselves, and by thus performing all the practical operations of the treatment they obtain an insight into working details which can be acquired in no other way. The number of students attending the classes during the different terms is given in the following tabulated statement. A very pleasing feature of the attendance was that several pupils—eight in number—took advantage of the Thames–Paeroa Railway to attend the evening classes at the Thames School. These students, after their day's work in the batteries at Karangahake, Komata, &c., was done, came down at considerable inconvenience and attended the school-classes, returning to their work again on the following morning. All the students sat at the end of the year for battery-superintendents' certificates.

TABLE of ATTENDANCES for the Year ending 31st March, 1900.

Name of Subject.	1899. First Term.	1899. Second Term.	1899. Third Term.	1900. First Term.
Registered students—				
General and mining geology	8	8	5	6
Mineralogy and blowpipe	8	8	5	6
Land- and mine-surveying	14	21	15	17
Mathematics	11	10	10	17
Mining and applied mechanics	14	21	15	17
Metallurgy of gold and silver	...	22	24	...
Practical chemistry	24	23	20	21
Theoretical chemistry	22	20	17	20
Practical assaying	28	24	28	26
Mechanical drawing	20	18	14	19
Total	149	175	153	149
Saturday science class	76	55	35	45
Total attendance at classes	225	230	188	194
Individual registered students	54	81	73	50
Total individual students	130	136	108	95

Thanks are due to the following gentlemen for donations of rock-samples, fossils, and minerals: Mr. W. A. MacLeod, B.Sc., for Tasmanian ores and fossils; Mr. Trelease, general collection; Mr. N. D. Cochrane, miscellaneous rock-samples; Mr. K. M. Barrance and Mr. K. M. Graham, fossils from the Auckland District; and Mr. J. Park, F.G.S., for a large and valuable collection of fossils and minerals from various parts of New Zealand. Mr. Grayden, Mr. Martin, and others have also assisted me with the collection of specimens for the museum.

A very interesting donation was made by Mr. T. A. Dunlop, manager of the Thames-Hauraki, and consisted of a pick, which has lain under water at a depth of 650 ft. in the Queen of Beauty shaft from 1885 to 1899. The wooden handle is well preserved, while the steel has been eaten into ridges and furrows by the acid waters. A section of the old pump columns which have been under water for fifteen years was also obtained. The iron is thoroughly perished, and the inside of the pipe has a coating of dark-coloured carbonate of iron nearly 1 in. thick.

I have to gratefully acknowledge the willing and valuable assistance rendered by Messrs. Banks, Graham, McLean, Rosewarne, and Brown in connection with the battery-work.

During 1899 the following Government certificates were granted to the Thames School of Mines students after examination, and on proof of the necessary practical experience: Seven first-class mine-managers' certificates and five battery-superintendents' certificates.

In January, 1900, I supervised the annual Government examination, for which twenty candidates presented themselves. Sixteen of these were Thames School of Mines students, three sitting for first-class mine-managers' certificates, two for first-class coal-mine managers' certificates, and eleven for battery-superintendents' certificates; but the results have not yet been declared.

The annual examinations were held during the second and third weeks of December, 1899. The papers, having been prepared and printed in Wellington, were forwarded in separate sealed packets to Mr. Coutts, Inspector of Mines, Thames, who brought them to the school each day at the specified hour of examination. The examinations were supervised by myself and Mr. W. H. Baker, B.Sc., my assistant. The answers were sealed at the end of each examination, and then sent to Wellington for correction. The examiners were Mr. Hayes, Inspecting Engineer; Mr. W. Skey, Government Analyst; Mr. A. McKay, F.G.S., Government Geologist; Mr. C. H. Pierard; and the Surveyor-General. The results were satisfactory, and are given in a tabulated statement below. One very encouraging feature was a large number of Saturday science pupils who presented themselves for examination, and most of whom obtained good marks. It is from pupils of this class that in a few years the regular students of the school will be drawn, and the training they now receive will be of great value to them in their future studies. The following table shows the results of the late examinations:—

RESULTS OF ANNUAL EXAMINATIONS, 1899.

Subject of Examination.	First Class.	Second Class.	Third Class.	Failed.	Total.
General and mining geology	1	...	2	...	3
Pumping and winding	...	...	4	...	4
Ventilation and explosives	1	2	1	...	4
Mining and applied mechanics	1	2	...	1	4
Theoretical chemistry (senior)	1	1	...	...	2
Theoretical chemistry (junior)	1	1	...	...	2
Practical chemistry (senior)	1	1	...	...	2
Practical chemistry (junior)	1	2	1	...	4
Practical assaying, dry (senior)	3	6	...	...	9
Practical assaying, dry (junior)	3	1	2	...	6
Practical assaying, wet (senior)	2	2	1	...	5
Practical assaying, wet (junior)	1	2	1	...	4
Surveying (land and mine)	1	3	...	...	4
Survey-map drawing	1	1	1	...	3
Mineralogy and blowpipe	2	1	...	...	3
Metallurgy	3	2	...	...	5
Mechanical drawing	1	2	3	...	6
	24	29	16	1	70
Saturday science	5	2	5	...	12
Totals	29	31	21	1	82

Mr. K. M. Graham secured the School of Mines University scholarship with the high average of 85 per cent. in the eight subjects of examination. The examination is a severe test, and as the conditions are not generally known I include a list of them in this report for publication. Mr. Graham showed great perseverance and application in his studies, and thoroughly deserves his success. He also obtained the President's medal for the highest aggregate in all the subjects of examination, gaining 1,079 marks in thirteen subjects, an average of 83 per cent., and a creditable performance.

It is pleasing to note that the students who have gained School of Mines scholarships have made and are making excellent progress. Mr. J. M. McLaren, who gained a scholarship in 1894, and Mr. W. H. Baker, who secured his in 1895, each gained his B.Sc. degree and a university scholarship in 1898, and have now gained first-class honours in science. Mr. McLaren has been appointed Assistant Geologist, Queensland, and Mr. Baker is Assistant Lecturer at the Thames School of Mines. Mr. W. Donovan, who received a scholarship in 1898, acquitted himself with credit last year at the University of Otago, where he is now continuing his studies, along with Mr. K. M. Graham.

SCHOOLS OF MINES.—AMENDED SCHOLARSHIP REGULATIONS.

1. Three scholarships at the Otago University will be offered annually for competition by students attending schools of mines within the colony: one to students from the North Island, and two to students from the Middle Island—namely, one from the West Coast, and one from Otago.

2. The scholarships will be of the annual value of £50 each to successful candidates who may reside three miles or more beyond the boundaries of the Borough of Dunedin, and of £30 to successful candidates who reside within the boundaries of the said borough, or within three miles thereof.

3. The scholarships will be tenable for three years, or for such other period less than three years as may at the discretion of the Minister appear to be necessary.

4. The scholarships will be open to all students as aforesaid who are not less than eighteen years of age on the day appointed for receiving applications, as stated in Regulation 5, and who shall have attended regularly at any school of mines within the colony for not less than two years.

5. The examinations will be held in the month of December in each year, on days which will be duly announced, at the Thames, Reefton, and Dunedin.

6. The examinations will be conducted in writing, and will embrace the following subjects: (*a*) Theoretical chemistry; (*b*) practical chemistry; (*c*) metallurgy of gold and silver; (*d*) mining; (*e*) ventilation of mines; (*f*) general and mining geology; (*g*) land and mining surveying; (*h*) drawing.

7. No scholarships shall be awarded to any candidate who does not obtain 75 per cent. of the marks in each subject.

8. Applications from candidates, accompanied by a fee of 10s., must reach the Mines Department, at Wellington, not later than the 1st November in each year.

9. Candidates must present themselves for examination on the day fixed, as provided in Regulation No. 5.

10. The examination-papers will be prepared by the examiners of the schools of mines at the Thames and Reefton.

11. The Minister of Mines retains to himself the right of cancelling any scholarship should the holder attend irregularly, or be reported for idleness or bad conduct.

TABULATED STATEMENT showing PARCELS of ORE treated at Thames School of Mines Experimental Plant during 1899–1900.

Name of Mine and District.	Description of Ore.	Dry Weight of Ore.	Assay-value of Ore per Ton.			Bullion saved.	Value per Ounce.	Percentage saved.		
			Gold.	Silver.	Value.			Gold.	Silver.	Value.
A.—BY PAN-AMALGAMATION.										
		Lb.	Oz. dwt. gr.	Oz. dwt. gr.	£ s. d.	Oz. dwt. gr.	£ s. d.			
Maorilander, Ohui ...	White quartz, with blue veins	800	6 6 1	26 14 9	27 17 7	7 0 20	1 2 10	83·6	52·9	80·6
Venus, Neavesville ...	Grey quartz and red oxides of iron	800	0 3 12	0 2 12	0 14 3	0 1 16	2 8 9	80·0	74·4	79·5
Sheet Anchor, Omahu ...	Brown quartz	1,800	11 14 9	104 17 3	57 7 3	55 18 0	0 12 4	95·9	69·8	91·8
Sheet Anchor, Omahu ...	Mullock and rubble	5,400	4 8 5	28 14 17	20 10 4	75 10 0	0 14 10½			
Welcome Jack, Gumtown	Brownish quartz, with blue veins	5,500	27 14 3	76 17 13	118 11 11	206 15 0	1 7 1	97·9	72·5	96·2
Royal Standard, Whare-kiraupunga	White quartz and mullock (O.)	5,040	0 15 10	1 14 0	3 5 2	4 16 12	1 8 0	93·0	80·1	92·2
Royal Standard, Whare-kiraupunga	White quartz (I.)	7,000	0 14 12	1 11 17	3 1 2	6 12 7	1 7 2	94·4	86·2	93·9
Royal Standard, Whare-kiraupunga	White quartz (II.)	7,100	0 1 0	0 1 21	0 4 2	0 8 0	1 10 2	93·4	78·8	91·0
Bay of Islands	Rusty-coloured quartz	2,000			Too poor	for treatment.				
Chelmsford, Tairua ...	Rusty-coloured quartz	500	3 3 0	7 6 5	13 6 7	1 11 6	1 12 0	85·6	57·3	84·0
Chelmsford, Tairua ...	Rusty-coloured quartz (winze)	560	1 7 17	2 0 8	5 14 10	0 14 12	1 14 8	87·8	81·5	87·6
Imperial, Karangahake ...	White flinty quartz	4,480	0 1 18	0 5 1	0 7 6	0 10 12	1 4 2	88·0	71·3	83·5
Sheet Anchor	Hard brown quartz	2,240	8 1 8	70 14 1	39 6 9	30 6 6	1 1 7	94·5	31·6	83·2
Sheet Anchor	Glassy quartz and rubble	2,080	9 14 2	69 18 2	45 16 2	57 12 0	0 13 10	97·2	73·1	93·6
Waitekauri King ...	Foliated quartz, with manganese-oxides ...	4,800	1 8 23	1 5 5	5 18 4	4 5 0	2 5 2	76·0	69·1	75·7
B.—BY CYANIDE.										
Golden Belt, Neavesville	Mullock and flinty quartz	850	0 5 22	0 4 4	1 4 1	...	...	75·4	71·3	75·4
Venus, Neavesville ...	Quartz coloured red, with iron-oxides ...	800	0 3 12	0 2 12	0 14 3	...	...	92·0	90·0	91·9
Puriri	Clayey tailings	2,360	0 2 2	...	0 8 4	0 1 12	0 4 0	70·0	...	70·0
Royal Standard ...	White quartz and mullock	2,600	0 16 9	1 16 13	3 9 2					
Royal Standard ...	White quartz (I.)	3,360	0 15 3	1 12 18	3 3 9	6 19 0	1 5 0	93·2	87·4	92·9
Royal Standard ...	White quartz (II.)	3,360	0 1 0	0 1 21	0 4 2					
Chelmsford, Tairua ...	Rusty-coloured quartz	1,400	3 3 0	7 6 5	13 6 7	8 15 0	1 4 2	86·6	78·0	84·7
Chelmsford, Tairua ...	Rusty-coloured quartz	1,540	1 7 17	2 0 8	5 14 10					
Waitekauri King ...	Foliated quartz, with manganese	2,600	1 5 5	1 17 19	5 4 7	3 13 0	1 9 3	87·3	90·4	87·4
Monowai	Concentrates	1,470	0 16 9	7 6 5	4 0 1	0 7 7	1 6 0	21·4	5·2	18·0
Monowai	Concentrates (chloridized)	470	0 15 3	7 1 4	3 14 7	0 14 12	0 15 2	74·4	39·2	67·7

The following miscellaneous parcels were also treated:—

Name.	Weight.	Melted Bullion.	Value.
	Lb.	Oz. dwt. gr.	£ s. d.
Progress Castle Rock	420	69 5 0	191 11 10
Bank of New South Wales, Thames	400	24 10 0	16 10 9
Sheet Anchor (69 oz. plate-amalgam)	...	20 19 0	74 12 0
Bank of New South Wales, Thames	350	28 6 0	21 0 0

During the year I have made a large number of determinations to ascertain the distribution of tellurium in the mines of the Hauraki Peninsula, and to find out whether its occurrence had any deleterious action on the recovery of the bullion by the ordinary processes. Although I have located tellurium in a number of places and mines where it has not hitherto been recognised, I have been unable to obtain a high percentage in any sample of ore that I have analysed, and generally the tellurium was found in only minute quantities mixed with a comparatively large amount of base sulphides, so that its mode of combination could not be determined. Its associates, however, are copper, gold, and silver in greater or less quantity. I found no tellurium in ore from Karangahake, Waihi, and Waitekauri, and certainly in the ore now being won in the mines of the Hauraki Peninsula there is little or no tellurium, and in no case is there sufficient to prejudicially affect the extraction of the gold. The chief places where I found tellurium are—Coromandel, in mispickel; Tapu, in copper- and iron-pyrites; Waiomo, in quartz containing a little copper-sulphides and rich silver-sulphides; Waiomo, in complex sulphide-ore; and at Tararu Creek.

I found a considerable amount of selenium associated with the silver and gold in certain of the Great Barrier ore.

With regard to the molybdenite located by myself in Tararu Creek there is nothing fresh to report. In June I found among some of the samples of ore sent to me for determination indications of molybdenite, and, in consequence, proceeded up the Ohio Creek with Mr. William Martin, and after some little search found an iron seam, about 1 ft. wide, carrying molybdenite in nests and pockets, and also in small stringers $\frac{1}{4}$ in. wide. I have since found the mineral in small quantities in several other places in the same creek, but nowhere in sufficient quantity to mine, and practically no work has been done on the vein in which it was first discovered.

From the Kawau Copper-mine, which is now being drained, Mr. Baker has received a very interesting specimen of native copper. The copper occurs in tree-like masses made up of well-formed crystals, and is found on the mine timbers which have been lying under water.

Notes on the Treatment of some of the Parcels in the Experimental Plant.

The parcel of Monowai tailings was obtained from the ore treated at the Monowai battery by Mr. Gordon French. The original ore, worth a little over £2 per ton, was crushed and partly concentrated until its value was £4 0s. 1d. per ton, but was not subjected to amalgamation or other process before being sent to the school. The analysis of the concentrated ore was as follows: SiO_2, 67·5 per cent.; $CuFeS_2$, 8·3 per cent.; FeS_2, 16·0 per cent.; PbS, 6·8 per cent.; ZnS, 1·4 per cent.: total, 100 per cent., with traces of bismuth, tellurium, and antimony. According to instructions, the concentrated ore was treated by cyanide; but the extraction was unsatisfactory, while the consumption of cyanide was high. A much higher return was obtained by roasting with salt, washing to remove soluble salts of copper, and then cyaniding; and the result would have been still more satisfactory but for the presence of some coarse gold, which was not dissolved by the cyanide solution. This process, however, is unsuitable owing to the cost. Probably the best mode of treating this ore, which contains a large amount of complex sulphides, some coarse gold, and is worth, say, £2 5s. per ton, would be to wet-crush, save the coarse gold on Muntz-metal plates, concentrate the tailings into a mineralised portion worth, say, £12 per ton, and save all the sands and slimes. These latter could readily be treated by cyanide at small cost, and the concentrates would pay to ship to the smelter.

Golden Belt.

The ore consisted of flinty quartz and mullock. On crushing, sampling, and assaying its value was found to be £1 4s. 1d. per ton. 850 lb. was treated by the cyanide process, which gave an extraction of 75·4 per cent. of its value. A small parcel from the Arrow section, and assaying £7 15s. 10d. per ton, was also tested by cyanide, which saved 73·4 per cent. of the value. In both of these parcels the greater part of the gold is found along seams in the solid quartz, and while part of the gold is fine, and some of it very fine, and easily extracted by cyanide, about one-quarter of the value occurs in particles of bullion too coarse for successful cyanidation. Wet crushing and amalgamation of the coarser particles of bullion, followed by cyanide treatment, appears to be the most suitable process, but care is necessary to save the fine gold existing in the ore.

A parcel of 800 lb. from the Venus section gave a return by pan-amalgamation equal to 79·5 per cent. of the value, while a laboratory test on the same ore gave an extraction of 91·9 per cent. by cyanide. The above shows that, although parts of the reefs may well be treated by the cyanide process, coarser gold may at any time be met with which could not be saved by that process, and provision should therefore be made for amalgamating that portion.

Sheet Anchor.

Various tests have been made on ton parcels from the mine, which is situated at Omahu. The reef lies nearly flat, is from 3 ft. to 9 ft. wide, and carries the best values along the foot-wall. The ore is brown quartz showing crystals and dark bands of silver-sulphide and some free gold, while occasionally a few filaments of native silver may be detected in the stone. Some of the quartz is of a glassy nature, and carries higher values, especially in silver, than the accompanying rubble. There is also a little iron-pyrites in the ore, but no great quantity. The following assays indicate the relative values in corresponding samples of the glassy quartz and rubble: Glassy quartz—Gold, 12 oz. 12 dwt. 1 gr. per ton; silver, 17 oz. 4 dwt. 3 gr. per ton: value, £62 2s. 2d. per ton. Rubble—Gold, 5 oz. 10 dwt. 22 gr. per ton; silver, 46 oz. 12 dwt. 15 gr. per ton: value, £26 16s. 11d. per ton.

By hot pan-amalgamation with chemicals 96 per cent. of the gold, 70 per cent. of the silver, and 92 per cent. of the value can readily be obtained by careful treatment. If after amalgamation the ore is concentrated to a quarter of its original weight, the sand tailings thus obtained assay nearly £5 per ton, showing a loss of £1 5s. per ton on ore originally worth £50 per ton, and equivalent to 2½ per cent. of the original value still left in the tailings. The remaining 3½ per cent. of the value is in the very fine slimes which float away very readily in water.

Cyanide treatment of these tailings is fairly successful, as 75 to 80 per cent. of the gold and silver can be extracted from them at small cost.

Chelmsford.

Parcel 1, consisting of splintery quartz, with red streaks of iron-oxides, was dried, dry-crushed, sampled, and assayed. The assay result was—Gold, 3 oz. 3 dwt. per ton; silver, 7 oz. 6 dwt. 5 gr. per ton: value, £13 6s. 7d. per ton. 500 lb. of the dry-crushed ore was pan-amalgamated, and yielded 1 oz. 11 dwt. 6 gr. of melted bullion, worth £1 12s. per ounce, which is equivalent to a saving of £11 4s. per ton, and shows a percentage saving of 85 per cent. of the gold, 57 per cent. of the silver, and 84 per cent. of the value of the ore. 1,400 lb. of the same ore was subjected to cyanide treatment, and 92 per cent. of the gold, 81 per cent. of the silver, and 91 per cent. of the value of the ore, equal to a saving of £12 3s. 8d. per ton, was extracted. The presence of a considerable amount of iron-oxide made the percolation somewhat troublesome; but on a working-scale, with suitable alterations in the method of treatment, a still higher extraction would be possible by the cyanide process.

The second parcel also consisted of splintery quartz, with seams of red oxide of iron. It was dried, sampled, and assayed, with the following result: Gold, 1 oz. 7 dwt. 17 gr.; silver, 2 oz. 0 dwt. 8 gr.: value, £5 14s. 10d. per ton. 560 lb. of the dry-crushed ore was pan-amalgamated, for a return of 14½ dwt. of melted bullion, worth £1 14s. 8d. per ounce, which is equivalent to a saving of 87 per cent. of the gold, 81 per cent. of the silver, and 87 per cent. of the value. 1,540 lb. of this ore was tested by the cyanide process, when 93 per cent. of the gold, 87 per cent. of the silver, and 93 per cent. of the value was extracted, equivalent to a saving of £5 7s. 8d. per ton.

The consumption of cyanide for both parcels was small, and the cost of cyanide treatment for these ores would be low. The gold occurred in a state of fine division, and was readily taken up by weak cyanide solution. A certain amount of slimes forms when these ores are crushed owing to the presence of oxide of iron, and the slimes carry a little value.

The method that would probably be found to answer for treating similar ore to these parcels would be to wet-crush, amalgamate part of the gold on copper plates, treat the sands direct by cyanide, and agitate the slimes with cyanide solution for the recovery of the appreciable values which would otherwise escape. The ore is easily crushed by stamps, and affords few difficulties in treatment.

SYLLABUS OF INSTRUCTION.

The following is the syllabus of instruction followed during the year:—

General and Mining Geology.—(Lecturer, the Director, Mr. F. B. Allen, M.A., B.Sc.)

Physical Geology.—The earth as a planet, its form and motions; geological climate; the atmosphere; ocean; solid crust; the interior of the earth.

Dynamical Geology.—Metamorphism; agencies modifying the crust of the earth—atmospheric, aqueous, chemical; weathering; sedimentation; classification of deposits—mechanical, aqueous, organic, and chemical; denudation and erosion.

Structural Geology.—Stratification; jointage; contortion; faults; conformity; unconformity; dip and strike; cleavage; metamorphic rocks; intrusive sheets, bosses, dykes, fissures; formation of quartz veins, lodes, and metallic deposits; dynamics of lodes; recovery of lost lodes.

Geological Surveying.—The practice of running natural sections; noting dip, strike, and inclination of strata and lodes; mapping geological formations; collection of mineral and rock specimens.

Stratigraphical Geology.—Classification of plants and animals; fossils; blending of species; geological record; the study of characteristic life, and distribution of formations from archæan to recent times, with special reference to the geology of New Zealand.

Mineralogy and Blowpipe Determination.—(Lecturer and Instructor, the Director.)

Systematic Mineralogy.—(1.) Physical properties of minerals, their hardness, S.G., &c. (2.) Optical properties: Refraction, reflection, polarisation, lustre, phosphorescence. (3.) Chemical properties. (4.) The application of the blowpipe, colour-tests, &c. (5.) Isomorphism, pseudomorphism, and allotropy. (6.) Distribution and paragenesis of minerals. (7.) Classification of minerals—chemical, economic.

Descriptive Mineralogy.—(1.) Non-metallic division: Carbon group, &c. (2.) Metallic division: A description of the principal ores of the common metals, and their New Zealand localities and modes of occurrence.

Crystallography.—(1.) The six systems, their axes, typical forms, modified forms, &c. (2.) Holohedral and hemihedral forms. (3.) Reading of faces.

Mathematics.—(Lecturer and Instructor, Mr. W. H. Baker, B.Sc.)

Arithmetic (including the simple rules).—Weights and measures (those bearing on mining and assaying), greatest common measure, least common multiple, vulgar fractions, decimal fractions, proportion, problems.

Algebra (Hall and Knight's Algebra).—The meaning and use of the various signs and symbols, the simple rules, greatest common measure, least common multiple, fractions, factors, symmetry, problems containing one unknown, simultaneous equations, quadratic equations, simultaneous equations with more than one unknown, problems involving quadratics and the use of several unknowns, practice in the use of formulæ and their transposition.

Euclid.—The first four books (Todhunter), including the definitions and axioms.

Land- and Mine-surveying.—(Lecturer and Instructor, the Director.)

Adjustments of theodolite, dial, level; chain and steel tapes; traversing with theodolite and dial; connecting survey with standard meridian; ranging lines; division of land; computation of areas by latitudes and departures; reduction of slope measurements; off-sets; chaining, computation of co-ordinates; balancing survey; plotting survey and off-sets; obstacles to alignment.

Mine-surveying.—Different methods of connecting underground with surface meridian; magnetic variation; to reduce magnetic meridian to true meridian; conducting underground traverse with theodolite and dial; correcting magnetic survey by method of back- and fore-sights; holing.

Mathematics.—Equations; logarithms; plane trigonometry; solution of triangles; calculation of last or connecting-line; of distance from working-face to nearest point on boundary of lease.

Levelling.—Recording levels; practice with level and staff; grading roads, tramways, and water-races; plotting and striking grades; calculation of contents of earthworks by prismoidal formula; grading with Abney or reflecting level.

Mining, Applied Mechanics, and Hydraulics.—(Lecturer, the Director.)

Mining.—Shafts: Selection of site, size; modes of excavation in dry and wet rock, wet sand, and swamp; timbering of shafts; ladders; chambers—size, excavation, timbering; levels and drives—size, excavation, timbering; securing sets on inclines; modes of stoping, height and timbering of stopes; main passes—size, timbering, division; mullock passes—size, timbering, distance apart.

Pumping and Pit-work.—Pumps and engines used in metal-mining, force-pumps, plunger-pump, draw-lift, fixing pump-pieces, bearers, friction-rollers, V-bobs, balance-bobs, main rods, flat rods, clacks, buckets, bucket-rod, catches, staples and glands; thickness of pipes; capacity of pumps.

Ventilation.—Atmospheric pressure, vapour density; ventilation of drives and underground workings by natural and artificial means; furnaces, water-blasts, fans; division of air-courses; noxious gases met with in metal- and coal-mines, their composition and detection.

Explosives.—Their use in quarries and mines, relative strengths, action, gases evolved, composition; charging boreholes; firing explosives; quantity to be used.

Hauling and Winding.—Safety-cages; man-engines; strength of ropes; strength of timbers.

Water-power.—Turbines, Pelton wheels, calculation of horse-power and flow of water from boxes and nozzles.

Text-book used: Gordon's "Mining and Engineering," 10s., Government Printer.

Practical Assaying.—(Lecturers and Instructors, the Director and Assistant.)

Dry Assaying.—(1.) The furnaces and appliances used in fire-assaying, with sketches. (2.) The fluxes, their properties and uses. (3.) The reducers and their reducing-powers. (4.) Fuels, and other reagents, as salt, iron, sheet and granulated lead, glass-powder, &c. (5.) Preparation of pure silver for parting gold and silver. (6.) Preparation of nitric-acid solutions for parting. (7.) Preliminary assays of ores and bullion, their use and application. (8.) Volatility of gold and silver—the influence of different temperatures in different parts of muffle; also of time in muffle. (9.) The operations in fire-assaying—*a*, powdering the ore; *b*, sampling the dry pulp; *c*, preparing the charge; *d*, fusing the charge, and extracting the lead-button; *e*, cupelling the lead-button; *f*, weighing the bullion; *g*, parting and calculating the value of the bullion. (10.) Probable sources of error in fire-assaying. (11.) Keeping note-books and proper record of results. (12.) The assay of litharge and red-lead. (13.) The assay of gold- and silver-ores—*a*, in clean quartz; *b*, in pyritous quartz; *c*, in concentrates and tailings; *d*, in roasted ores; *e*, by amalgamation assay; *f*, by scorification assay. (14.) The retorting and melting of bullion. (15.) The refining of base bullion. (16.) The assay of bullion—*a*, weighing the assay; *b*, cupelling for base; *c*, adding pure silver for parting; *d*, rolling the "cornet"; *e*, parting the "cornet"; *f*, calculating the value. (17.) The calculation of results obtained in batteries from treatment of gold- and silver-ores. (18.) The assay of galena and cerussite; the valuation of lead, gold, and silver. (19.) The valuation of lead bullion. (20.) The assay of tin-ore (cassiterite).

Text-book: Park's "Laboratory Instructions in Assaying and Practical Chemistry," 7s. 6d.

Wet Assaying.—(21.) Operations—*a*, solution; *b*, crystallization; *c*, precipitation; *d*, filtration; *e*, decantation; *f*, washing; *g*, evaporation; *h*, distillation; *i*, ignition; *j*, sublimation; *k*, fusion;

l, use of blowpipe; *m*, the use of spirit- and gas-lamps; *n*, the preparation of reagents and tests of purity, &c.; *o*, the preparation of fluxes; *p*, test-papers; *q*, the balance, weights, operations of weighing; *r*, preservation of platinum crucibles. (22.) The assay of iron-ores—*a*, gravimetric; *b*, volumetric. (23.) The assay of copper-ores—*a*, as oxide; *b*, as metal by electrolysis; *c*, volumetric; *d*, colorimetric. (24.) The assay of antimonite. (25.) The assay of bismuth glance. (26.) The assay of cinnabar. (27.) The assay of galena. (28.) The assay of zinc-ores. (29.) The assay of manganese-ores. (30.) The assay of nickel-ores. (31.) The assay of cobalt-ores. (32.) The assay of chromite of iron. (33.) The assay of arsenic-ores. (34.) The assay of silver-ores—*a*, volumetric; *b*, gravimetric. (35.) The valuation of specimens.

Text-book: Park's "Assaying and Practical Chemistry," 7s. 6d.

Practical Chemistry.—(Lecturer and Instructor, Mr. W. H. Baker, B.Sc.)

Junior Class.—(1.) Operations (these are the same as for wet assaying). (2.) The separation of the metals into groups. (3.) Qualitative tests for the different metals. (4.) The separation of silver, lead, mercury. (5.) The separation of copper, bismuth, arsenic, and antimony. (6.) The separation of iron and alumina, iron and zinc, iron and manganese, iron and chromium. (7.) The separation of calcium and magnesium. (8.) The separation of barium, strontium, and calcium. (9.) The separation of potassium and sodium. (10.) Qualitative tests for the acid-radicals (inorganic)—*a*, H_2S, HCl, HBr, HI; *b*, HNO_3, $HClO_3$; *c*, HBO_2, H_2CO_3, H_2CrO_4, HF, H_3PO_4, H_4SiO_4, H_2SO_4, H_3AsO_4.

(Lecturer and Instructor, the Director.)

Senior Class.—(1.) The estimation of chlorine. (2.) The estimation of sulphuric acid and sulphur. (3.) The estimation of phosphoric acid. (4.) The analysis of limestones and calcareous freestone. (5.) The analysis of coals, coke, charcoal, and shales. (6.) The analysis of barytes. (7.) The analysis of fluor-spar. (8.) The analysis of scheelite and wolfram. (9.) The analysis of rocks (including estimation of K_2O and Na_2O). (10.) The analysis of fireclays. (11.) The analysis of soils. (12.) The analysis of complex sulphide-ores. (13.) The analysis of milk. (14.) The analysis of waters. (15.) The analysis of bone-dust and bone-ash, with estimation of nitrogen. (16.) The analysis of guanos and apatite. (17.) The analysis of superphosphates. (18.) The estimation of alcohol—*a*, by weight; *b*, by volume. (19.) Volumetric analysis: The estimation of—alkaline hydrates; alkaline carbonates; acids, HCl, H_2SO_4, HNO_3, $HC_2H_3O_2$, $H_2C_4H_4O_6$; haloid salts, HCN, KCN, I, As_2O_3, SO_2 ($Na_2S_2O_3 + 5H_2O$).

Text-book: Park's "Laboratory Instructions in Assaying and Practical Chemistry," 7s. 6d.

Theoretical Chemistry.—(Lecturer, Mr. W. H. Baker, B.Sc.)

Principles of Chemistry and Chemical Philosophy.—Atoms, molecules, vapour-density, quantivalence, chemical formulæ.

The Elements.—(1.) Their history, occurrence, preparation, properties, uses. (2.) Compounds of the elements, their history, preparation, properties, uses, &c.

Metallurgy of Gold and Silver.—(Lecturer, the Director.)

(1.) Ore-crushing and pulverising machinery—*a*, rock-breakers; *b*, stamps; *c*, mills, rolls, &c. (2.) Metallurgy of gold—*a*, amalgamation on copper plates, in pans, &c.; *b*, chlorination processes and operations; *c*, leaching processes (Cassels', &c.). (3.) Metallurgy of silver—*a*, smelting and amalgamating ores; *b*, smelting—reduction with lead and fluxes; *c*, amalgamation in pans with mercury—use of chemicals; *d*, leaching with solvents—sea-water or brine, ammonia, sodium hyposulphite, alkaline cyanides; *e*, oxidizing and chloridizing roasting.

Text-books: Eissler's "Metallurgy of Gold and Silver"; Gordon's "Mining and Engineering."

Physics.—(Lecturer, the Director.)

Fundamental ideas of matter and energy; conditions of matter; gravitation; mechanical powers; sound; light; heat; magnetism; electricity; chemistry; physiology and health.

Practical Astronomy.—(Lecturer and Instructor, the Director.)

The ecliptic; equinoxes; meridians; longitude; latitude; altitude; declination; right ascension; azimuth; use of Nautical Almanac; polar distance; zenith distance; hour-angle; sidereal time; mean time; solar time; parallax; refraction; retardation; acceleration; convergency of meridian; determination of meridian by star-and-sun observations, by single altitudes and greatest elongation of circumpolar stars; use of star-charts; calculation of hour-angle, azimuth, and altitude of celestial bodies for any time and place; determination of latitude by meridian altitudes; determination of time by star-transits and sun-observations.

Mechanical Drawing.—(Instructor, Mr. E. J. Williams.)

Use of scales; printing and lettering; outline drawing; shading; colouring; drawing to scale from copies and objects, portions of machinery, and woodwork, showing plans, elevation, and sections.

Special Classes are held for the instruction of candidates for the Government mine-managers', battery-superintendents', and engine-drivers' certificates. First term, first Monday in February to 30th April; second term, 9th May to 20th August; third term, 9th September to 20th December. Registration of membership, 10s. per annum; class-fees, 5s. per term for each subject taken up.

Scale of Charges for Public Assays and Analyses.

	£	s.	d.
Bullion assays	0	5	0
Assays of quartz, tailings, or concentrates	0	5	0
Examination and determination of rocks and minerals	0	5	0
Assay of lead- and tin-ores, each	0	5	0
" iron- and manganese-ores	0	10	0
" copper- and antimony-ores	0	10	0
" zinc-, mercury-, and bismuth-ores	0	10	0
" gold- and silver-ores, with parting assay	0	5	0
Analysis of limestone and calcareous freestone, complete	1	0	0
Analysis of limestone and calcareous freestone, partial	0	10	0
" coals and fuels, each	0	10	0
" rocks and soils, complete	2	0	0
" rocks and soils, partial	1	0	0
" fireclays and slags	1	0	0
" manures	2	0	0
" waters, complete	3	0	0
" waters, partial	2	0	0
" nickel-, cobalt-, and chrome-ores	0	10	0
" concentrates	1	10	0
" complex sulphide-ores, &c.	1	10	0

Experimental Plant.

Report of working-tests of parcels of gold- and silver-ores, concentrates, and tailings, from 1 to 3 tons:—

(1.) By Cassel cyanide process: Wet or dry crushing—*a*, by percolation; *b*, by agitation. (2.) By amalgamated copper plates. (3.) By amalgamation in pans: Wet or dry crushing—*a*, by raw amalgamation in charges; *b*, by Washoe process with chemicals (1, hot pan-amalgamation; 2, after chloridizing roasting). (4.) Chlorination: Small barrel tests.

Cost of treatment (minimum charge): £5 per parcel not exceeding 1 ton.

Students are permitted to work in the experimental plant under special conditions.

Distribution of Prizes and Certificates.

The annual distribution of prizes and certificates took place on the 13th February before a large gathering of students and their friends. In the absence of the President, Hon. James McGowan, Minister of Mines, Mr. James Park, F.G.S., presided, and delivered an able address to the students. Mr. Alexander McKay, F.G.S., also expressed his pleasure at being present at the distribution of certificates, and gave a valuable and instructive address.

Governing Body.

At the annual meeting the following officers and members of the Council were elected for the ensuing year: President, Mr. T. A. Dunlop; Vice-President, Mr. E. McDonnell; Treasurer, Mr. J. H. Smith; Council, Messrs. W. Baker, E. F. Adams, W. H. Paltridge, G. Denby, M. Paul, T. C. Bayldon, L. Melhose; Hon. Secretary, Mr. Albert Bruce (address, Thames School of Mines).

COROMANDEL SCHOOL.

Mr. P. J. McLeod, B.A., B.Sc., Director, reports:—

I have the honour to report as follows on the Coromandel School of Mines for the year ending 31st March, 1900:—

The school has had a successful year. The attendance at lectures has been good, and the results obtained excellent.

The number of students attending the classes during the different terms is shown in the following table:—

Table of Attendances for the Year ending 31st March, 1900.

Subject.	1899.			1900.
	First Term.	Second Term.	Third Term.	First Term.
Mining	12	11	12	9
Surveying	12	11	12	10
Mathematics	11	6	6	9
Metallurgy	...	...	6	...
Practical chemistry	8	7	7	12
Theoretical chemistry	9	7	8	12
Assaying	12	12	14	20
Mechanical drawing	5	...	...	5
Mineralogy	7	2	2	2
Geology	7	7	...	2
Total	83	63	67	81
Total individual students	33	26	28	30

No Saturday science class for school-children is held.

Changes have been made in the staff. In July Mr. J. M. Maclaren, M.A., resigned the Directorship, and I was appointed in August to that position. Mr. A. J. Litten, Lecturer in Mathematics, and also Mr. T. Wrigley, Laboratory Assistant, resigned at the end of the third term. The present staff is as follows: Director, P. J. Macleod, B.A.; Lecturer in Mathematics, Mr. A. H. Gatland; Instructor in Mechanical Drawing, Rev. C. F. R. Harrison; Laboratory Assistant, Mr. J. R. Thurlow.

At the annual general meeting held in February the following officers and members of Council were elected for the ensuing year: President, Hon. James McGowan, M.H.R.; Vice-Presidents, Francis Hodge, Esq., and A. T. Kenrick, Esq.; members of Council, Messrs. J. B. Rockliff, T. W. Rhodes, A. N. Jamieson, J. Reilly, H. F. Shepherd, W. Moorcraft, and W. Jones; Hon. Secretary, William Thomas, Esq.

Syllabus.—The course of instruction is similar in every respect to that of the Thames School of Mines, and embraces all the subjects necessary for the Government mine-managers', battery-superintendents', engine-drivers', and Government assayers' certificates.

In August I supervised a special examination for battery-superintendents' certificates, for which there were two candidates; and in January, 1900, the annual Government examination for mine- and battery-managers' certificates, when four candidates presented themselves for the former and three for the latter examination. Six of these were Coromandel students, but the results are not yet to hand.

The past year shows an increase in the number of public assays done. These consisted chiefly of small parcels from prospectors and samples from mines where no assayers are employed. The number of assays was sixty-six, and besides these several analyses were made.

Some thirty or forty typical sections of the rocks of the Coromandel Goldfield have been made for use in the microscopic determinations. This is taught in connection with geology, and should be of great service to students to enable them to accurately determine the nature of the country.

The annual examinations were held in December, 1899, the papers being set and examined by Mr. J. Hayes, Inspecting Engineer; Mr. A. McKay, F.G.S., Government Geologist; Mr. W. Skey, Government Analyst; and Mr. C. H. Pierard. The following table shows the results of these examinations:—

Subject of Examination.	First Class.	Second Class.	Third Class.	Failed.	Total.
Metallurgy	2	2	...	...	4
Mineralogy	1	...	...	...	1
Surveying	3	1	...	...	4
Practical chemistry (junior)	1	...	...	...	1
Theoretical chemistry (junior)	1	1	...	...	2
Practical assaying, dry (junior)	1	...	...	...	1
Practical assaying, dry (senior)	3	2	...	...	5
Practical assaying, wet (senior)	2	...	...	...	2
Ventilation and explosives	...	2	...	...	2
Pumping and winding	...	...	1	1	2
Totals	14	8	1	1	24

These results are highly satisfactory, and show that 59 per cent. of the certificates granted were first class, 33 per cent. second class, and 4 per cent. third class.

The Coromandel public battery, to be run in connection with the School of Mines, is now in course of erection. The battery will consist of a modern five-stamp mill, and also a single stamper for specimen stone. Wet crushing and plate-amalgamation are to be adopted, and the concentrates are to be treated in berdans. The whole is to be run by an oil-engine, water-power not being obtainable. The battery will be of great service both to students and to the district generally, and should overcome the difficulties with which prospectors have at present to contend in having to ship their ores to the Thames for treatment.

In conclusion, I have to thank the Rev. C. F. R. Harrison and Mr. A. J. Litten for the gratuitous services they have rendered in conducting the mechanical-drawing and mathematics classes; also Mr. T. Wrigley for his able assistance in the determination of analyses and public assays; and, finally, the members of the Council and the hon. secretary for their untiring co-operation in forwarding the interests of the school.

WAIHI SCHOOL.

Mr. P. G. Morgan, M.A., Director, reports:—

I have the honour to submit the following report of the Waihi School of Mines for the year ending the 31st March, 1900:—

During the past year the school has been well attended, and a substantial advance has been made. I am glad to be able to say that most of the students have made good progress in their studies, whilst a few have done remarkably well. It must be said, however, that this school is not taken advantage of by many young men resident in Waihi, who might well attend with benefit to themselves and ultimately to the community at large. On the other hand, many of the students have come to the school several times a week from Waitekauri and other places at a distance.

During 1899 the average number of students was fifty, and the class-attendance 143. This shows a substantial increase over 1898, when the average number of students was forty-three, and the class-attendance only 108. During the first term of the present year the attendance has somewhat decreased, the number of registered students being at present forty-five, and the class-attendance 127. The chief cause of the diminution seems to be the war-fever, quite a number of last year's students having volunteered for service in South Africa. The attendance next term will almost certainly be much larger, as some nine or ten young men have already intimated their intention of joining the school at the beginning of next term.

The following table shows the attendance at the various classes during the past twelve months:—

TABLE of ATTENDANCES for the Year ending 31st March, 1900.

Name of Subject.	1899.			1900.
	First Term.	Second Term.	Third Term.	First Term.
Mining	13	17	13	9
Mathematics	10	12	12	22
Theoretical surveying	14	18	8	8
Practical surveying	8	11	7	9
Mineralogy and geology	12	8	3	...
Theoretical chemistry	21	14	11	22
Practical chemistry	24	26	22	23
Assaying	30	35	31	25
Metallurgy	11	14	10	6
Drawing	5	4	5	3
Totals	148	159	122	127
Saturday science class	...	...	...	26
Total class-attendance	148	159	122	153
Individual registered students	49	55	46	45
Total individual students	49	55	46	71

The following is a summary of the work done during 1899 in the various classes:—

Mining and Mining Geology.—(*a.*) The sinking of shafts, construction of main drives, &c. (*b.*) Timbering and support of mine-workings. (*c.*) Drainage of mines, pumping appliances, &c. (*d.*) Hauling and winding. (*e.*) Mine-ventilation. (*f.*) Tapping water in mines; modes of constructing dams. (*g.*) Blasting and explosives. (*h.*) Strength of materials. (*i.*) Nature and mode of occurrence of mineral deposits. (*j.*) Formation of lodes. (*k.*) Dynamics of lodes. (*l.*) Dredging rivers and alluvial flats—the different types of dredges, their construction, mode of working, saving the gold, &c. (*m.*) Hydraulic sluicing.

Text-books: Le Neve Foster's "Ore and Stone." Mining—Gordon's "Mining and Engineering."

Mathematics.—(*a.*) Arithmetic—the whole subject. (*b.*) Algebra—elementary rules; simple equations; factors; use of formulæ; problems. (*c.*) Geometry—Euclid, Book I., props. 1–26.

Text-books: Hudson and Smith's "Arithmetic"; Hall and Knight's "Elementary Algebra"; Todhunter's Euclid.

Theoretical and Practical Surveying.—Nature and use of logarithms; the trigonometrical ratios; solution of triangles; adjustments of theodolite, miners' dial, and dumpy level; chaining; traversing; connecting underground and surface meridians; calculation of traverses; plotting survey; plan-drawing.

Mineralogy and Blowpipe Analysis.—(*a.*) The six crystallographic systems. (*b.*) Physical and chemical properties of minerals. (*c.*) Use of the blowpipe; tests for simple minerals. (*d.*) Classification of minerals.

Text-book: Collins's "Mineralogy."

Geology.—(*a.*) Physical and dynamical geology. (*b.*) Classification and mode of formation of rocks. (*c.*) The geological periods.

Text-book: Boulger's "Geology."

Theoretical Chemistry.—Fundamental principles; the non-metallic elements; the alkali metals.

Text-books: Roscoe's "Elementary Chemistry"; Jago's "Inorganic Chemistry."

Practical Chemistry.—(*a.*) Qualitative tests for metals and acids. (*b.*) Separation of the metals. (*c.*) Manipulation of chemical apparatus, and the various operations connected with chemical analysis, such as solution, precipitation, filtration, washing, drying, ignition, weighing, &c. (*d.*) Analysis of simple substances.

Text-book: Park's "Assaying and Practical Chemistry."

Assaying.—(*a.*) Furnaces, materials, and appliances. (*b.*) Dry assays of gold, silver, mercury, tin, lead, copper, and antimony ores. (*c.*) Assay of gold and silver bullion. (*d.*) Problems and calculations. (*e.*) Gravimetric assays of silver, lead, antimony, bismuth, copper, iron, zinc,

manganese, mercury, chromium, nickel, and cobalt. (*f.*) Volumetric assays of copper, iron, zinc, and potassium cyanide. (*g.*) Colorimetric estimation of copper. (*h.*) Estimation of chlorine, hydrochloric acid, sulphur, sulphuric acid, phosphorus, and phosphoric acid.

Text-books: Beringer's "Assaying"; Park's "Assaying and Practical Chemistry."

Metallurgy of Gold and Silver.—(*a.*) Crushing machinery. (*b.*) Concentrating machinery. (*c.*) Amalgamation processes. (*d.*) Chlorination and bromination processes. (*e.*) Cyanide process. (*f.*) Miscellaneous lixiviation processes. (*g.*) Smelting processes. (*h.*) Roasting- and smelting-furnaces. (*i.*) Chemistry of the various processes.

Text-books: Park's "Cyanide Process"; Rose's "Metallurgy of Gold"; Louis's "Gold-milling."

Drawing.—Use of drawing instruments; use of scales; geometrical drawing; plan-drawing.

The school-year, it may be mentioned, is divided into three terms, as follows: First term, from the first Monday in February to the 30th April; second term, 9th May to 20th August; third term, 9th September to 20th December.

In mathematics, practical surveying, theoretical surveying, mineralogy, geology, and drawing a fee of 5s. is charged for each class per term; in mining, practical chemistry, assaying, and metallurgy the fee is 7s. 6d. for each class per term. In addition to the class-fees there is a membership-fee of £1 per annum.

In September, 1899, on account of the increased number of our students, the committee decided to appoint an assistant lecturer. Mr. K. M. Barrance, who as a student of the Thames School of Mines had passed in all the subjects of the Government examinations with great credit, gaining the President's medal, and had afterwards pursued his studies at the Otago University and at Auckland College, was selected for the position. Mr. Barrance took up his duties in November, and has since that time been of great assistance in the work of the school. His advent has enabled me to start a Saturday science class for the benefit of the senior pupils of the public school and others who may wish to attend.

During last year, on account of the large assay class (thirty-five in number), it became necessary to enlarge the assay-room a second time. This was done at a cost of about £50, a new melting-furnace and a muffle-furnace being also erected.

Ten of our students presented themselves for examination in the papers sent up by the Mines Department last December. The marks awarded show that these ten students between them gained ten first-class certificates, nine second-class certificates, and three third-class certificates. These results are a great improvement on last year's, and I hope that this year will again show an advance. A number of students who were well qualified to sit for examination did not do so, as they did not care to lose a day or two's work. I think it is a pity that the Government do not recognise school of mines' examinations in some way, and thus provide an incentive to the students to sit for examination; for instance, students who had gained first-class certificates in certain subjects might very well be exempted from examination in those subjects when sitting for the mine-manager's or battery-superintendent's certificate.*

Last January a number of our students sat for mine-managers' and battery-superintendents' certificates, but the results of the examination are as yet not known. At the previous examinations six of our students obtained battery-superintendents' certificates, and one a first-class mine-manager's certificate.

The number of assays made for the public during the year is not large, only fifteen having been made. Most of these were fire-assays for gold and silver; two were analyses of coal, and one of hæmatite. Several samples were received in which I was asked to determine the presence of platinum and the allied rare metals; no trace, however, of any of these metals was found. In addition to these assays, a number of determinations of minerals were made free of charge. It may be interesting to record the following results obtained in the laboratory during the year: Some mineralised stone from a small bunch of ore in the Martha lode was found to contain considerable percentages both of galena and zincblende; the black sand found more or less abundantly on the surface of the Waihi Plains, and also on the Waihi Beach, was found to consist mainly of titanate of iron (one sample contained 42 per cent. of TiO_2); some rich sulphide-ore from Te Aroha answered to the tests for tellurium.

I have to express my thanks to the committee for their ready co-operation with me in every plan for the improvement of the school; to the Assistant Lecturer, Mr. K. M. Barrance, who has devoted himself with great energy to the interests of the school; and to the various donors of mineralogical and geological specimens. In this connection the thanks of the school are particularly due to the Rev. Joseph Campbell for the gift of a number of typical fossils and minerals.

In conclusion, it gives me much pleasure to state that the Waihi School of Mines is in a flourishing and healthy condition. The past year has been an important and busy year in the history of the school, and I trust that the coming year will not fall behind its predecessor.

NELSON SCHOOL.

Mr. W. F. Worley reports as follows:—

I have the honour to report as follows upon School of Mines work done in Nelson from the 31st March, 1899, to the 31st March, 1900:—

* I do not agree with Mr. Morgan here, for the simple reason that, as an examiner, I would not expect so much from a candidate at an examination of this sort as at an examination for a mine-manager's certificate.—J. Hayes.

Blowpipe-analysis Classes.

Two classes for the study of blowpipe analysis have met weekly throughout the year. Forty-eight boys have belonged to these classes during that time, but this number proved too large for carrying on really effective work. So much individual attention is needed by boys studying this subject that a class of twelve is as large as one can manage well. The work done was similar to that of former years—namely, the qualitative testing of the most commonly occurring ores. The testing of quartz for gold by crushing and panning-off forms part of the course of instruction. Attention is also given to any other heavy residues besides the gold in the dish.

Mostyn Constable, who has now been three years in the class, named, at a recent examination, nine out of ten test-substances, and was awarded a second-grade certificate. The supplying of the classes with test-substances is still a matter of considerable difficulty.

Assaying.

Forty-six assays and tests were made for the public during the year, but none of these call for special mention.

Geology.

A week was spent on that part of the mineral belt lying between the Champion Copper-mine and the Dun Mountain. A collection of rocks was made, and these are now being gradually prepared for microscopic examination. It is hoped that in a few years some valuable information about the mineral belt will be obtained in this way.

During the year a careful study of the Nelson Boulder Bank and its geological surroundings was made, with the view of determining its origin. As a result of these investigations, the opinion was arrived at that a wall of rock on edge underlies the loose surface boulders. A paper upon the subject was read before the Nelson Philosophical Society, and will be found in the "Transactions" for this year.

Science Class for Teachers.

A science class for teachers preparing for the D and E examinations was held for a few weeks late in the year. There were eight members in this class, and the teaching consisted chiefly of experiments to illustrate what they had already learned theoretically about chemistry and electricity. The class was started too late in the year to allow of much really effective work being done.

Conclusion.

My thanks are due to the Town Schools Committee for the use of the schoolroom on two afternoons a week after school-hours.

Mr. Herbert Saunders, a former student at my agricultural-science class, has this year passed with credit his examination in that subject.

REEFTON SCHOOL.

Mr. J. W. Lee, the Instructor, writes:—

I have the honour to report on the progress of the Reefton School of Mines since it was re-opened in December, 1899, to the 31st March, 1900.

Lectures were commenced on the 1st December, 1899, and have been well attended throughout; and, considering the short time which has elapsed, very satisfactory progress has been made.

Twenty-seven students were enrolled during the first term (from the 1st December, 1899, to the 2nd March, 1900). At present the number of individual attending students is twenty-eight, and this number is likely to be increased during this current and future terms. The following statement shows the average attendances to date:—

Class.	Number of Students.	Average Attendance.
Mining and mathematics	15	12
Surveying	15	12
Theoretical chemistry	13	10
Practical chemistry	13	10
Practical assaying	12	6

The instruction given in each class has been as follows:—

Mining and Mathematics.—Arithmetic, comprising the simple rules, vulgar and decimal fractions; square and cube roots; timber-measurement; time-sheets; simple and compound proportion; problems; also practical questions in areas of circles, triangles, &c., and their corresponding relative volumes.

More advanced former students have received special instruction in mining and its kindred subjects, viz.: Ventilation, natural and artificial; useful effects of fans, blowers, and furnaces discussed; water-gauge; splitting of air; friction; velocity of air in airways, &c.; noxious gases met with in mines—composition, detection, properties, and effects on workmen; explosives, their composition and use, relative strengths compared, &c.

Text-book: Gordon's "Mining and Engineering."

Surveying.—Practical mathematics, logarithms, solution of triangles; grades and relative angles; and plane trigonometry.

Both the mining and surveying classes have been well and regularly attended, and the students have made satisfactory progress. As nearly all of the pupils are as yet not sufficiently far advanced for practical work with the instruments, no field-work has been done, but, providing suitable instruments can be obtained, it will be very soon attempted.

Theoretical Chemistry.—General principles; outlines, atomic theory, atoms, molecules, specific gravity; combining weights, quantivalence, hydrogen, oxygen, and ozone, their properties, combinations, and preparation; synthesis and properties of water; chemical arithmetic; equations; calculations of percentage composition of compound substances from formulæ, and *vice versâ;* reduction of volumes of gases to normal temperature and pressure, and reverse; density or mass; comparison thermometric scales.

Text-books: Bloxam's "Chemistry," and Lupton's "Chemical Arithmetic."

Practical Chemistry.—Preparation of reagents; separation of metals into groups and from each other, proceeding step by step to simple quantitative analyses; principles of volumetric analysis, standard normal solutions of reagents; tests and analysis of cyanide-of-potassium solutions. All these processes are shown and illustrated by laboratory-work.

Practical Assaying.—Fluxes—composition and properties; furnaces and appliances used; assay of gold, silver, tin, antimony, and lead ores for their metallic contents; calculation and reporting results in proper form.

Text-book for practical chemistry and assaying: Park's "Laboratory Instructions in Assaying and Practical Chemistry," 2nd edition.

The cost of material and fluxes for assaying and chemistry classes has been a heavy drain on my resources, as the number of public assays which tend to recoup the assay-office has been small. This decrease in the number of public assays is probably to be attributed to the attention of mining investors being attracted to dredging for some time past, and hence prospecting operations for quartz reefs are more restricted. Further appliances, such as a small rock-breaker or ore-crusher, and a suitable assay-balance, are much required, also a stock of chemicals and material.

The number of assays since the 1st December, 1899, has been about twenty; berdan tests, twelve; and a number of qualitative tests of minerals submitted by prospectors and others have been performed in most cases free of charge, as conducive to further prospecting being done.

Class-fees are—Mining, 7s. 6d. per quarter; surveying, 5s. per quarter; chemistry and assaying, each 7s. 6d. per quarter. No members' fees are required. Students also have the privilege of having fire-assays performed for them at half ordinary fees.

In conclusion, I would like to respectfully draw your attention to the facts that since the school has been reopened great interest has been taken by the students in the progress of the school, as will be seen from foregoing statement; and, further, as mining in this district promises to be an industry of great magnitude, it is evident that the Reefton School should receive in future a more liberal treatment than it has previously received for some time past. Also, I respectfully submit that no subsidies or grants have been received by the committee of the school for years past. It is also important that more efficient and extensive appliances should be provided for the use of students, those now in use being incomplete.

OTAGO SCHOOL.

The following is the annual report of Professor Ulrich, Director of the Otago School of Mines, to the Otago University Council:—

With this I have the honour to submit my annual report regarding the attendance, work, results of the annual examinations of the School of Mines during the past session (1899), together with remarks on practical teaching facilities, requirements, and other points concerning the school.

The attendance number of students during the past session was forty-eight, comprising forty-three regular students for the full course of the school, one student from the Thames School of Mines holding a Government scholarship and studying for the B.Sc. degree, New Zealand University, and four students who attended in special subjects only—viz., two in general geology, one in assaying, and one in assaying, metallurgy, and general geology.

Of the forty-three regular students, thirty-four were previous ones returned for the finishing or further prosecution of their studies, whilst the remaining nine comprised fresh men. One of these latter attended for only the last half of the session in subjects which he could follow and understand, but in which he did not sit for examination, intending to take the subjects again next session. All these new students are desirous, so far as I could ascertain, of gaining the associateship in mining and the certificate of metallurgical chemist and assayer, being prepared to attend the school for four years for the purpose if required. Owing to illness, one of the older students (not reckoned in the before-given number) was obliged, on medical advice, after a few weeks' study to cease attendance at the classes; and towards the end of the session other three students became ill, and lost a number of lectures, causing two to fail in the examinations in several subjects, whilst the third was too ill to attend the examinations. His status being, however, such as to require him to pass in only two more subjects for finishing his full course of study at the school, he will be permitted to sit for special examination in these subjects as soon as he has sufficiently recovered from his illness. With the exception of the cases just mentioned, the attendance of the various classes by the students has been very satisfactory, and there have been much fewer failures in the examinations (twenty-six against forty-nine) than last year. In this connection I may mention the gratifying fact that the eleven students who failed in mining last year all passed a second examination held during the past midwinter vacation.

The eight new registered students passed through the first year's course of the mining division, except four who failed in mathematics, one who gave up this subject after a short attendance, and

two who failed in mining, geology, and theoretical chemistry. Of the other thirty-four students only a small number have strictly followed the curriculum prescribed in the calendar, and I am therefore not in the position to state exactly how many have passed respectively through the second and third year's courses, as they are prescribed. However, so much may be accepted as correct that seven have finished their studies during the past session and will not return, whilst of the remaining twenty-seven students, eleven can be placed as having passed the second and another eleven the third year's course, leaving five who comprise students of from three to five years' standing, two going in for more than one certificate, and the other three requiring still to pass in one or two subjects they hitherto failed in.

Of the seven students who are leaving the school, six have successfully passed the examinations in all the prescribed subjects of the divisions they entered for.

All the new students who entered for the first year's course and one older one, who had not taken the class before, attended the evening class for "first aid" established by the St. John Ambulance Association.

The numerical attendance at all the classes and the results of the recent annual examinations are shown in the following table:—

Subjects.	Attendance.	Entered for Examination.	Results of Examinations.			
			First Class.	Second Class.	Third Class.	Failures.
General (University)—						
Mathematics	10	10	1	1	4	4
Theoretical mechanics	13	13	...	4	7	2
Theoretical physics	21	21	1	6	12	2
Practical physics	16	16	1	7	7	1
Theoretical chemistry	13	11	1	4	4	2
Practical chemistry	11	11	3	1	7	...
Theoretical biology	1	1	...	...	1	...
Practical biology	1	1	...	...	1	...
Special (School of Mines)—						
Mining, second course	26	25	...	16	7	2
Mining geology	9	8	1	3	3	2
General geology	12	12	4	5	3	...
Palæontology	1	1	...	1	...	...
Mineralogy	12	11	...	4	5	2
Petrography	12	11	...	6	5	...
Quantitative chemical analysis ...	13	...	5	3	5	...
General metallurgy	16	16	4	6	4	2
Special metallurgy	18	18	5	5	4	4
Practical assaying, first course ...	12	12	6	6	...	...
Practical assaying, second course ...	11	11	1	5	5	...
Blowpipe analysis	10	10	5	5	...	...
Applied mechanics	9	9	2	3	2	2
Surveying, first course	10	10	2	2	5	1
Surveying, second course ...	13	13	5	2	6	...
Drawing—						
Model...	8	8	8	...	...	...
Practical plane geometry ...	8	8	7	1	...	...
Solid geometry	7	7	7	...	...	...
Machine	8	8	3	5	...	....
Totals	...	...	72	101	97	26

Through the standstill of many of the mines in the Hauraki goldfields, North Island, a formerly extensive field for practical mining-work has been much narrowed for our students, and a number have found it rather difficult to secure working-places during the vacation. However, so far as I have learnt, many have been successful on the west coast of this Island and at Reefton, and there is only a small number of them at present still unemployed, and these have chances of soon getting work. One has gone to a prearranged place at the Great Western Silver Lead Mine, Zeehan, Tasmania. The students' travelling-expenses by sea this year are very much increased, I am sorry to say, owing to the Union Steamship Company having seen fit to withdraw the formerly granted liberal reduction in fares.

Regarding the number of students likely to attend the school next year, it will in all probability not reach that of previous years. As far as the register shows, there should be thirty-six students returning for completion or further prosecution of their studies; but of these, three are doubtful, as, judging from repeated failures, they are apparently unable to pass in some of the subjects. Reckoning, therefore, thirty-three as the returning number, this would be increased by the uncertain number of new entries, which very probably will not be as large as in former years, on account of the new regulation that for the future all new students entering for the object of gaining any of the diplomas or certificates of the school require to have passed the matriculation

examination of the New Zealand University. There are so far only two new students certain of entry—viz., one from Canterbury, who applied for registration some time ago, and one from our Boys' High School, who is the winner of the scholarship recently established by the liberality of the Hon. A. Lee Smith. Going by past experience, before the rush to the school set in, the attendance number of regular students for next session may, I think, reach forty; whilst in addition three or four occasional students can always be counted upon.

I am thankful to mention that through the Council granting me the assistance of two advanced students—one for the large class in mineralogy, the other for that in petrography—I have been enabled to get well through these subjects, and the students have considerably benefited by the increased attention given to them individually. And I may also state that the provision of more windows along one long wall of the small lecture-room has served its purpose—*i.e.*, of procuring more light for microscope-work for the class in petrography—very satisfactorily, and there is now, with a decreasing number of students in prospect, no necessity for such an extension of the building towards the lawn-tennis court as I thought it advisable to recommend in my last year's report.

The lecturer in general geology (Dr. Don) made, with his students, during the session an extended field excursion, about which he reports as follows: "The excursion extended over four days. We did not find it convenient to make our usual trip south of Dunedin; but, instead, the Oamaru excursion was extended so as to take in the interesting Kakanui series. The places of interest visited were Sandymount and Highcliff, on Otago Peninsula; the miocene beds of Hampden, with the Moeraki series, and Katiki beds, and the lower Kakanui River, with the interesting altered limestone near the mouth; further, the bedded volcanic tuffs of Cape Wanbrow and the limestone quarries of various points around Oamaru, including the diatomaceous deposit of Weston and other parts of the district. These excursions were well attended, and much enjoyed by the students."

The highly instructive value of such geological field observations, as detailed by Dr. Don, has been pointed out by me in previous reports; but it requires to be mentioned here that Dr. Don liberally lightens the expense of the excursions to the students by open hospitality at his home near Oamaru.

The provision by the Council of a second theodolite, which was urgently needed, for the large class in practical surveying (as pointed out in my last year's report) was highly appreciated by the lecturer (Mr. Begg) and the students. Mr. Begg wrote to me on this head as follows: "The acquisition of another theodolite for the school proved a great boon, as it enabled the whole class of the second year's course of fourteen to carry on field practice at the same time. A considerable amount of useful work was got through during the midwinter vacation, including road, railway, and mining engineering. The work done by the nine students attending the lectures of the first year's course comprised the reduction of traverses, calculation of areas, keeping level books, calculating grades and quantities, and drawing of plans to scale."

Regarding teaching facilities and requirements, I am sorry to say that an order for certain mineral collections and small apparatus needed for the classes in mineralogy and petrography, and sanctioned by the Council in the early part of the year, has even at present not come to hand; it is to be hoped that it may arrive before next session. The readjustment of the optical parts of the seven petrographic microscopes is again required, and may be set down as an annual necessity, the expense of which would probably be under £2.

As mentioned in my last year's report, the provision of new drawings of typical mining machinery, appliances, &c., for the mining classes becomes with every year more pressing. Those in use may with some repairing last through next session, but I am afraid not beyond that. On account of a new edition of Dana's "Text-book of Mineralogy" (the one we use) having come out, in which the systematic arrangement of the minerals is considerably altered, it will be necessary to rearrange our teaching collection of minerals (over one thousand specimens) according to the new system, a task I shall try to finish during the vacation.

Following the custom of previous years, I may, from information received during the year, give the following short account of the careers of a number of our associates: J. Chisholm is manager of cyanide-works and assayer at Murrin Murrin, Western Australia; W. A. McLeod has a well-paid post as Lecturer at the Technical School, Hobart, Tasmania; P. McLeod is director of the Coromandel School of Mines; R. C. Boydell is general manager of the Sunlight Gold-mining Company at Metz, New South Wales; E. Graham and D. Mathieson have established themselves as public assayers and cyanide experts at Charters Towers, Queensland; E. Bray is cyanide-manager at Charters Towers, Queensland; H. E. Stephens is battery-manager and cyanide-manager at the Lachlan Gold Estates Company, New South Wales; A. Mosley is manager of cyanide-works at Mount Allen, New South Wales; A. C. Street has a good post in the service of a mining syndicate in the Island of Borneo; Adam Hay is assayer at the Mount Lyell Mine, Tasmania; D. V. Allen is battery-manager's assistant at the Kauri Gold Estates Mine, Opitonui. Those past students I mentioned in my last year's report are, so far as known, still in the positions they occupied at that time.

Particulars are given of the work done for the public during the year by Mr. F. B. Stephens, the lecturer in metallurgy, in assays and analyses, and with the testing plant, and by the Director in the determination of minerals and rocks. From this it appears that over eighty assays were made. Only three tests were made by the testing plant.

During the year donations of specimens, &c., have been made by Messrs. J. M. Maclaren (Director, Coromandel School of Mines), D. V. Allen, F. B. Stephens, A. Hamilton, A. Sligo, J. Logan, W. Goodlet, W. H. Macadam, R. H. Walcott, W. A. McLeod, W. Begg, G. B. Neale, and Dr. Black.

EXPENDITURE ON SCHOOLS OF MINES.

The following table shows the expenditure by the Government on schools of mines since their inauguration, 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.	Scholarships.	Salaries of Teachers, and Travelling-expenses, &c.	Total Sum paid by the Department 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
Totals ...	5,988 0 5	1,134 3 1	350	14,369 11 10	21,841 15 4

The above statement shows the amount expended on the different schools of mines throughout the colony; but, in addition to this, the sum of £8,053 6s. 2d. has to be added, as that has been paid to the School of Mines attached to the University of Otago, £750 being paid last year towards maintaining the school, which makes the total expenditure up to the 31st March last to be £29,895 1s. 6d. This expenditure has extended over a period of fifteen years.

GOLD- AND SILVER-PRODUCTION.

The several branches of mining for precious metals have been steadily prosecuted throughout the year.

In the North Island reef- or lode-mining is the only type represented, and the bullion obtained in many instances is in the form of gold combined with silver; but in the West Coast and southern mining districts (Middle Island) every class of mining-work is in vogue where gold is to be got, and comprises the labours of the solitary digger with his cradle or sluice-box, beach-combing, ground-paddocking, tunnelling, ground-sluicing, hydraulic sluicing and elevating, and dredging rivers and auriferous flats for alluvial gold, whilst quartz reefs or lodes are not neglected. Rapid advances have been made in dredge-mining during the year; in fact, it may be said that quite a boom has been, and is being, experienced. Many really good claims have been put on the market, and the success which has attended the operations of the greater number of working-dredges, and the rich harvests won by them, have caused an excited demand for properties of this kind. Investors would do well to thoroughly satisfy themselves as to the *bonâ fide* character of any claims put before them. When this precaution has been taken, and investigations have proved satisfactory, there is probably no branch of gold-mining which offers so secure a field for investment. The subject will be more fully treated under its own heading.

The following comparative statement shows the quantity and value of gold entered for exportation for the last two years:—

Name of District.	Year ended 31st March, 1899.		Year ended 31st March, 1900.		Increase for 1900.	Decrease for 1900.
	Oz.	Value.	Oz.	Value.	Oz.	Oz.
		£		£		
Auckland ...	148,183	545,463	168,836	625,207	20,653	...
Marlborough ...	621	2,406	344	1,382	...	277
Nelson	1,720	6,882	2,589	10,251	869	...
West Coast ...	74,700	298,824	94,081	376,076	19,381	...
Otago	78,289	315,306	126,791	513,341	48,502	...
Canterbury ...	12	49	22	87	10	...
Totals ...	303,525	1,168,930	392,663	1,526,344	89,138	...

QUARTZ-MINING.

During the year a considerable amount of development-work has been in progress in the several mining districts of the North and Middle Islands. Ground has in several instances been well tested and opened up, and machinery erected on a fairly extensive scale at some of the newer ventures, whilst at several old mines improvements in machinery, &c., have been effected with a view to more efficient and economical working.

In a few instances I have been pleased to note the foresight displayed in well proving the ground before going to the expense of laying down costly plant, and so satisfying the proprietaries of the future character of the undertakings.

Some cases have come under my notice where, if the properties had been handled in a comprehensive manner, and opened out on a fairly extensive scale, splendid results would have been obtained; but, although these same properties have given fairly good returns at times, in spite of being intermittently worked, they are small in comparison to what would have been the case had sufficient capital been employed and the mines opened out and equipped with first-class machinery and gold-saving processes in the first instance. Taken as a whole, this branch of the industry may be said to be on a sound footing, and there is every reason to expect an increase in the output of gold from the quartz-mines of the colony.

The following statement shows the companies operating in New Zealand whose headquarters are outside the colony, together with the nominal amount of their capital:—

Name.	Locality in which Operations are being carried on.	Nominal Share Capital.	London Office.
		£	
Achilles Gold-mines	Otago	92,000	6, Queen Street Place.
Anglo-Continental Gold Syndicate (Limited)	General	100,000	Austinfriars, London.
Anglo-New Zealand Mines Investment	"	100,000	54 and 55, London Wall.
Apakura Syndicate	"	1,800	10, Bloomfield Street.
Aroha Gold-mines	Aroha	100,000	30 and 31, St. Swithin's Lane.
Australasian Gold Trust	Taitapu, Nelson	500,000	9, St. Mildred's Court, E.C.
Blagrove's Freehold Gold-mining Company	Coromandel	62,500	97, Dashwood House, E.C.
Blue Spur and Gabriel's Gully Consolidated Gold-mining Company	Otago	130,000	6, Great St. Helen's, E.C.
Britannia (Hauraki) Gold-mining Company	Coromandel	100,000	34 and 36, Gresham Street, E.C.
C.N.Z. Syndicate	General	10,000	..
Collingwood Goldfields	Collingwood, Golden Bay	150,000	46, Queen Victoria Street, E.C.
Colville Company	Coromandel	7,500	7, Drapers' Gardens, E.C.
Consolidated Goldfields of New Zealand	Reefton	225,000	11 and 12, Cornhill, E.C.
Coromandel Exploration Syndicate	General	2,000	6, Great St. Helen's.
Cromwell Proprietary	"	100,000	54, Old Broad Street, E.C.
Dolcoath Gold-mining Company (Hauraki Peninsula, New Zealand)	Coromandel	150,000	142 and 143, Palmerston Buildings, E.C.
Dual Syndicate	General	10,000	3, Clement's Lane, E.C.
East Hauraki Gold-mining	Coromandel	100,000	Finsbury House.
Ethel Reef Gold-mining Company	Te Aroha	200,000	Dashwood House, E.C.
Fame and Fortune	Thames	50,000	110, Cannon Street.
Finance, Mines, Industries Association	..	5,000	..
Fortuna (Hauraki) Gold-mines	Thames	50,000	3, Laurence Pountney Hill, E.C.
Glenrock Consolidated (Limited)	General	225,003	35, Queen Street, E.C.
Gloucester Gold-mining Company	Thames	120,000	Throgmorton House, E.C.
Golden Blocks	Taitapu, Nelson	100,000	11, Old Broad Street, E.C.
Golden Eclipse Mine (Hauraki)	Thames	75,000	..
Golden Lead of Hauraki	Coromandel	100,000	Moorgate Court, E.C.
Golden Pah (Hauraki)	"	62,500	97, Dashwood House, E.C.
Goldfields of Hauraki Prospecting Syndicate	General	3,000	53, New Broad Street, E.C.
Goldfields of New Zealand	"	100,000	13, St. Helen's Place, E.C.
Gold Trust of New Zealand	"	100	4, Great Winchester Street, E.C.
Good Luck Gold-mines of New Zealand	..	75,000	..
Grey Consolidated	Grey	200,000	15 and 16, George Street, S.W.
Hauraki Associated Gold Reefs	Coromandel	100,000	Winchester House.
Hauraki (Auckland) Goldfields Syndicate	General	10,000	36, Basinghall Street, E.C.
Hauraki Development Syndicate	Thames	25,000	..
Hauraki East	General	150,000	6 and 7, Grocers' Hall Court, E.C.
Hauraki Golden Age Mines	Thames	..	13 and 14, Abchurch Lane, E.C.
Hauraki Golden Bay Mines	General	150,000	8, Old Jewry, E.C.
Hauraki Gold-mining Company	Coromandel	40,000	97, Dashwood House, E.C.
Hauraki New	"	150,000	3, Princes Street.
Hauraki (New Zealand) Associated Gold-mines	"	100,000	..
Hauraki Peninsula Exploration	Thames	20,000	..
Hauraki South Gold-mining Company	Coromandel	90,000	7, Great Winchester Street.
Hikutaia Gold Syndicate	Ohinemuri	15,000	Suffolk House, E.C.
Humphrey's Hydraulic Sluicing	Humphrey's Gully	150,000	11, Cornhill, E.C.
Inkerman Combined Gold-mines	General	200,000	15 and 16, George Street, S.W.
Irene (Hauraki) Gold-mine	Kuaotunu	80,000	Dashwood House.
Island Block Gold-mining Company	Otago	60,000	4, Lombard Court, E.C.
J.R. Exploration Syndicate	..	5,000	..
Kapai-Vermont Gold-mining Company	Kuaotunu	150,000	1, St. Helen's Place, E.C.
Kapanga Gold-mining Company	Coromandel	250,000	97, Dashwood House.
Karaka (Limited)	Thames	150,000	..
Kathleen Crown	Coromandel	75,000	Dashwood House.
Kathleen Gold-mine	"	75,000	Dashwood House.
Kauri Freehold Gold Estates	General	250,000	6, Drapers' Gardens.
Kawarau Dredging Company	Kawarau River, Otago	15,000	..
Key of Komata	Ohinemuri	100,000	34 and 36, Gresham Street, E.C.
Komata Exploration Company	"	..	31, Lombard Street, E.C.
Komata Reefs Gold-mining Company	"	100,000	97, Dashwood House.

Name.	Locality in which Operations are being carried on.	Nominal Share Capital.	London Office.
		£	
Kuranui-Caledonian Gold-mining Company ..	Thames ..	175,000	20, Great Winchester Street.
London and Auckland Exploration Company ..	..	250,000	..
London and New Zealand Exploration	General ..	100,000	Broad Street House.
London and New Zealand Finance Corporation ..	" ..	102,000	139, Cannon Street, E.C.
London and West Australian Exploration.. ..	" ..	270,000	1, Great Winchester Street.
London and West Australian Investment	" ..	100,000	Broad Street House.
Mahara Royal	..	150,000	54, Old Broad Street.
Mahakirau Syndicate	..	20,000	3, Crown Court.
Maori Dream Gold-mines, Tairua	Tairua	130,000	8, Old Jewry, E.C.
Maori Gold	"	100,000	8, Old Jewry.
Maori Syndicate	General ..	10,000	Austinfriars Passage, E.C.
Maoriland Gold-mines	" ..	95,000	Dashwood House.
Mariposa Gold-mines	..	100,000	3, Crown Court.
May Queen (Hauraki)	Thames ..	200,000	22, Austinfriars.
Melville's New Zealand Corporation	General ..	100,000	20, Great Winchester Street, E.C
Mines Corporation of New Zealand	" ..	251,875	3, Princes Street, E.C.
Moanataiari Gold-mining Company	Thames ..	200,000	110, Cannon Street.
Monowai Gold-mines	Waiomo ..	150,000	28, Renfield Street, Glasgow.
Montezuma Gold-mines	Te Aroha ..	30,000	15, Sergeant's Inn.
New Alburnia Gold-mining Company	Ohinemuri ..	180,000	Finsbury House, E.C.
New Alburnia Gold-mining Company	Thames ..	180,000	Finsbury House, Bloomfield Street, E.C.
New Hauraki Gold Properties	Thames and Coromandel	100,000	Dashwood House.
New Hauraki Properties	Coromandel ..	80,000	Dashwood House.
New Inkerman Mines	Reefton ..	100,000	..
New Zealand and General Mining Syndicate ..	General ..	25,000	19A, Coleman Street, E.C.
New Zealand and Globe Exploration	" ..	10,050	4, Great Winchester Street, E.C.
New Zealand and Western Australia Syndicate ..	" ..	50,000	Portland House.
New Zealand Broken Hills Gold-mining Company ..	Tairua, Thames..	300,000	13, St. Helen's Place, E.C.
New Zealand Consolidated	General ..	50,000	15, George Street, Mansion House, E.C.
New Zealand Corporation	" ..	100,000	3, Laurence Pountney Hill, E.C.
New Zealand Crown Mines Company	Karangahake ..	200,000	11 and 12, Cornhill, E.C.
New Zealand Exploration Company	General ..	75,000	30, St. Swithin's Lane.
New Zealand Finance Syndicate..	" ..	10,000	32, Old Jewry, E.C.
New Zealand Gold Development Syndicate ..	.. ..	..	23, College Hill, E.C.
New Zealand Goldfields	General ..	50,500	23, College Hill, E.C.
New Zealand Gold Investment	" ..	5,000	11, Abchurch Lane.
New Zealand Gold Share and Finance Company ..	" ..	..	3, Newman's Court, Cornhill.
New Zealand Gold Share and Finance Company ..	" ..	..	
New Zealand Joint-stock and General Corporation..	" ..	150,000	Finsbury House, E.C.
New Zealand Jubilee Gold-mines	Waitekauri ..	125,000	20, Great Winchester Street, E.C.
New Zealand Minerals Company	General ..	250,000	3, Laurence Pountney Hill, E.C.
New Zealand Mines Trust	" ..	200,000	11, Abchurch Lane.
New Zealand Pioneers	" ..	100,000	46, Queen Victoria Street.
New Zealand Talisman	Karangahake ..	150,000	65, New Broad Street.
New Zealand Venture Syndicate	General ..	5,000	11, Abchurch Lane.
Norman Proprietary Gold-mines	Waitekauri ..	75,000	Bloomfield House, E.C.
North Island New Zealand Prospecting Syndicate	General ..	50,000	9, St. Mildred's Court, Poultry, E.C.
North Kapanga Gold-mining Company	Coromandel ..	60,000	54, Old Broad Street, E.C.
Ohinemuri Syndicate	Owharoa ..	60,000	11, Abchurch Lane.
Otago Syndicate	General ..	20,025	30, St. Swithin's Lane.
O.P.Q. Waipori Gold-mines	Otago	150,000	3, Laurence Pountney Hill, E.C.
Peveril Gold-mines	Coromandel ..	80,000	27, Old Jewry.
Phœnix	Macetown, Otago	200,000	3, Queen Street.
Preece's Point Proprietary (Hauraki)	Coromandel ..	100,000	Dashwood House.
Premier New Zealand Gold-mining Company ..	Macetown, Otago	50,000	3–5, Queen Street, Cheapside, E.C.
Progress Mines of New Zealand	Reefton ..	275,000	11 and 12, Cornhill, E.C.
Puriri Gold Estates	Puriri, Thames ..	175,000	..
Ravenscliff Mining Company	General ..	60,000	Winchester House.
Royal Oak of Hauraki	Coromandel ..	250,000	63 and 64, New Broad Street.
Scandinavian Gold-mines	Hauraki ..	110,000	3, Newman's Court.
Scottish Coromandel Corporation	Coromandel ..	175,000	..
Scotty's Gold-mines	" ..	100,000	63 and 64, New Broad Street.
Southern Star Gold-mines	" ..	75,000	63 and 64, New Broad Street.
Success Gold-mines	" ..	50,000	Dashwood House.
Taitapu Gold Estates	Nelson ..	150,000	9, St. Mildred's Court.
Tararu Creek Gold-mining Company	Thames ..	95,000	Dashwood House.
Thames-Hauraki Goldfields	" ..	275,000	54, Old Broad Street, E.C.
Tokatea Consols	Coromandel ..	100,000	45 and 46, Broad Street Avenue.
Tokatea of Hauraki	" ..	150,000	63 and 64, New Broad Street.
Triumph-Komata Gold-mine	Ohinemuri ..	175,000	Finsbury House.
Tui Gold-mines	Tui Creek ..	100,000	8, Old Jewry, E.C.
Union-Waihi Gold-mining Company	Waihi	200,000	11, Abchurch Lane.
United New Zealand Exploration	General ..	250,000	22, Austinfriars.
Victor Waihou Gold-mining Company	Karangahake ..	170,000	63 and 64, New Broad Street.
Waihi Consolidated Gold-mines	Waihi	200,000	39, Lombard Street, E.C.
Waihi-Gladstone	"	100,000	8, Old Jewry.
Waihi Gold-mining Company	"	320,000	11, Abchurch Lane.
Waihi-Grand Junction	"	200,000	18, Finsbury Circus.
Waihi New	Thames ..	160,000	11, Abchurch Lane.
Waihi Proprietary Company	General ..	175,000	Bishopsgate Street House, E.C.
Waihi-Silverton Gold-mines	Waihi ..	100,000	23, College Hill, E.C.
Waiho Hydraulic Sluicing and Water-race Company	Westland ..	..	9, New Broad Street, E.C.
Waitaia Gold-mines	General ..	100,000	82, Gordon Street, Glasgow.

Name.	Locality in which Operations are being carried on.	Nominal Share Capital.	London Office.
		£	
Waitekauri Central	Waitekauri ..	65,000	63, New Broad Street.
Waitekauri Consolidated Gold-mines	" ..	120,000	Swan Chambers, E.C.
Waitekauri Cross	" ..	100,000	19A, Coleman Street.
Waitekauri Extended	" ..	175,000	63 and 64, New Broad Street.
Waitekauri Gold-mining Company	" ..	230,000	11, Abchurch Lane.
Waitekauri United	" ..	150,000	Finsbury House, E.C.
Waitekauri Union Claims	Hauraki ..	300,000	15 and 16, George Street, E.C.
Wealth of Nations	Reefton ..	..	77, Bishopsgate Street Within, E.C.
Welcome Gold-mining Company	" ..	110,000	11, Cornhill, E.C.
Westport Twins Gold-mines	Westport ..	100,000	28, Basinghall Street, E.C.
Westralia and New Zealand Gold-explorers ..	Macetown, Otago ..	..	3–5, Queen Street, E.C.
West Tokatea Gold-mine	Coromandel ..	50,000	..
Whangamata Gold Corporation	Whangamata ..	200,000	23, College Hill, E.C.
Wheel of Fortune	Stafford, Westland	125,000	..
Winding Creek Gold-mining Company	Otago	30,000	14, Sherborne Lane, E.C.
Woodstock	Karangahake ..	150,000	6, Drapers' Gardens, E.C.
Woodstock Main Reef	Ohinemuri ..	..	3, Princes Street, E.C.

REMARKS ON QUARTZ-MINES.

Hauraki, Nelson, and West Coast Mining Districts.

For the reasons given at the outset of this report, I have to refer to the reports of the Wardens and the Inspectors of Mines for details of the industry in the above-named districts.

Otago and Southland District.

I have visited the principal mines during the year. With the exception of the developments at the O.P.Q. reefs, at Waipori, and, to a lesser degree, at the Bonanza Mine, Nenthorn district, there is very little new work to call for special mention. Some prospecting has been done at Merivale, near Otautau, in Southland. It is reported that a reef has been struck (and its continuance proved for 150 yards along the line) having well-defined walls 3½ ft. apart, the stone being white crystalline quartz varying from 6 in. to 14 in. thick. A trial crushing is said to have yielded gold at the rate of 11 dwt. to the ton, after specimen-stone had been picked out.

In the Hindon and Barewood districts quartz-mining is practically at a standstill. At Nenthorn and Macrae's work is on a very small scale, with the exception of the Bonanza and Donaldson's Mines. At the latter scheelite is found associated with the quartz, and is saved by concentration. It is a valuable product, and commands a ready sale. Cockerell and party are now reopening the old Mount Highlay Mine, expecting to obtain scheelite in addition to gold-bearing quartz. Most of the claims are dependent on water-power for crushing purposes, and at the end of March were unable to work their batteries owing to scarcity of water. Messrs. Peddie, White, and Phelan are excavating a site for a small battery at Mount Highlay, Mr. Garrett is driving on what is known as "The Ounce reef," and Mr. J. Davis has a small steam-power battery ready for work.

Mount Highlay.

The claim held by the Mount Highlay syndicate covers an area of 100 acres. Until recently all the stone got was from different points along the line of outcrop, and, so far as is seen, the reef appears to run more like a coal-seam, having a dip towards the north-west. An incline tunnel following the dip of the stone has been commenced, and at my visit was only a few yards in length, but was much too wide. Owing to the extreme weather and lateness of the winter, it had not been possible to get timber on the ground. I found it necessary to show the men engaged how to set timber to advantage, and to call the attention of the management to this and other matters. If the stone continues to dip as I saw it, I think (judging from the proved line of outcrop) that a large tract should be available, and would strongly recommend the mine being properly prospected by driving a dip tunnel in the quartz. If found to continue downwards (on the incline gradient) a level tunnel might be driven from a gully about half a mile away, which would open out a large body of stone. This would give free drainage, and the quartz could be opened out like a coal-mine, underground haulage being largely by gravitation. A battery could be erected here, and electrical power for driving same be generated at the Taieri River. At present there is a long and tortuous wooden tramway connecting the mine with the battery, which must be very costly to work. The present battery plant consists of ten heads of stamps, with blanket-tables and silvered plates. Motive-power, five heads of water at 150 ft. head, acting on a 6 ft. Pelton wheel. Two of Cockerell's stampers have been erected here experimentally; they have a combined stamping and grinding motion.

Mount Highlay quartz is of comparatively low grade, but with a large body of it, and worked somewhat on the lines suggested, it should be made to pay fairly well, and particularly so if scheelite is associated with the quartz.

Canada Reefs, viâ Milton.

During the past year the work has been chiefly carried on upon what is known as Lawson's reef. The adit has been driven east upon the reef, and stoped out nearly to the surface. It is about 120 ft. from the surface to floor of adit, and is good standing ground. The walls of the reef

are solid and well defined, showing that the country has not been much disturbed. The quartz from this reef has to be carted about three-quarters of a mile to the tramway at the top of the hill, and is then lowered to the battery, which is situated at the edge of the river. Some work was done on the Canada reef at the beginning of the year by sinking a small shaft on the reef, and then driving east for the purpose of getting under the old workings; but, owing to some disagreement upon the mode of working by the party of tributers, work was stopped after crushing about 200 tons, which gave a return of about 5 dwt. of gold per ton. Lawson's reef is being now worked upon tribute, and several small crushings been done, giving from 8 dwt. up to 21 dwt. of gold per ton. Five men are employed.

Burnt Creek, near Waitahuna.

Very little work has been done upon this property during the past year, owing to the company being in liquidation; but what has been carried out was upon the north line of reef. The adit has been driven about 20 ft. further east, but is still in broken country, although the walls of the reef are fairly well defined. Several small crushings of quartz were put through the battery, with the result of about 2 dwt. of gold per ton. Arrangements are about completed to buy the assets of the company, and it is expected that active operations will be resumed.

Waipori.

Bella Reef, Lammerlaw Range (Secretary, Mr. Robert McKeich, Lawrence).—After standing idle for some time, this mine has been reopened recently by a private company. A crosscut from Reef Gully, some 400 ft. in length, cuts the reef, which was formerly worked up to the surface for a limited distance and at a higher level. The present level is below the old stopes, and in solid ground, with nearly 100 ft. of backs overhead. The reef varies from 2 ft. 6 in. to 6 ft. in width, its underlay being about 70° from the horizontal. There is a percentage of scheelite in the stone, but it is not extracted. The battery consists of five heads of 750 lb. stamps, with silvered plates. No blanket-tables used. At my inspection the company were having their first crushing; the results were not known, but ½ oz. of gold per ton of stone was anticipated.

O.P.Q. Mine.—As development-works have been carried on to a greater extent here during the last year or two than at any other quartz-mine in Otago, the following general description will doubtless prove interesting:—

"The O.P.Q. Mine is situate a mile and a half to the south of Waipori Township, on the dividing-ridge between the Waipori River and Pioneer Creek. The name 'O.P.Q.' is derived from the initial letters of the name first given to the reef—viz., the Otago Pioneer Quartz Reef, so called from its being the first payable quartz lode discovered in the Province of Otago. From the date of its first discovery till 1897 work was intermittently carried on by small parties, who put in short tunnels from various points along the back of the lode, with, on the whole, good results. In 1869 a shaft was commenced which was afterwards put down 160 ft., and for several years work was carried on by a company formed in Dunedin; 20 chains south of this company's works another shaft was sunk by Mr. J. R. Perry. In March, 1897, a special claim of 74 acres was made over by the then owners to the New Zealand Minerals Company, who soon afterwards acquired a small claim held by Messrs. Eaton and party. The properties were towards the end of 1897 transferred to the O.P.Q. (Waipori) Gold-mines (Limited), an English company, who in the past two years have carried out works on a much larger scale than was before attempted. Prior to the company's commencing operations a small tunnel or adit-level had been driven by Eaton and party a distance of 430 ft. This tunnel was reopened and extended until its total length is now 1,395 ft. Crosscuts put in at different places along the line of the tunnel total in length 246 ft. Five rises have been put up to various heights for purposes of ventilation and opening out stopes; one of these rises communicates with the surface, another with the level above, while the other three are still in course of construction. Another tunnel 55 ft. above the level of Eaton's, after being driven by Ritchie and Black 375 ft., was allowed to collapse. This has now been cleaned out, retimbered, and driven a further distance of 565 ft., making its full length 940 ft. The crosscutting done from this tunnel amounts to 130 ft. Two rises were put through to the surface and a winze sunk 47 ft. below the level. At the mouth of this tunnel a hopper was constructed to hold 30 tons of quartz. The amount and value of quartz opened up by these two tunnels were sufficient to warrant the exploration of the lode at deeper levels. A shaft has been sunk 285 ft. through a mica-schist rock interlaminated with quartz. At 270 ft. a crosscut 128 ft. long was put in to intersect the lode. From this point of intersection a level has been driven 327 ft. north and 261 ft. south, and 70 ft. of crosscutting has been done from the level. Two rises have been put up to communicate with the lowest level driven from the old shaft of the Dunedin company. The old workings have been partly cleaned out and explored, with the intention of utilising them in future operations. Stoping has been done at the different levels since October last, about 170 tons of quartz weekly being taken out to keep the crushing plant continuously working. A crosscut tunnel was constructed from the main shaft 80 ft. below the collar to connect with Eaton's tunnel. This serves the double purpose of an adit- and haulage-level, the quartz won from Eaton's being sent to the surface through the main shaft, and so saving the trucking to the mouth of the tunnel and thence to the battery. The main working-shaft is vertical, and is divided into three compartments, through two of which hauling is done, while the third is taken up with ladders and pumps. The winding-compartments are each 4 ft. by 3 ft. 6 in., and the pumping-compartment 5 ft. by 4 ft. The ladders are in slanting lengths of 24 ft. each, giving a perpendicular rise of 20 ft., with a landing or platform at each length. The shaft is lined with 9 in. by 3 in. timbers, with a 12 in. by 12 in. pump-bearer set at every 50 ft. These carry a 9 in. Cornish pump, which raises the water through a vertical height of 205 ft from the sump, discharging at the level of Eaton's tunnel, through which the water runs to daylight. The bucket or draw-lift now in use

will shortly be replaced by a plunger. The quantity of water raised per hour is about 8,000 gallons, but the plant is capable of raising double that quantity through a greater height. Machinery for the mine was made by Messrs. Robey and Co., of Lincoln, England. A 20-horse-power locomotive boiler supplies steam to a double-cylinder engine arranged under the boilers. In addition to the engine-pump, a Worthington duplex pump is attached to supply feed-water to the boiler. The engine-cylinders are 11 in. in diameter and 16 in. stroke, and the drum-shaft is driven from the engine-shaft by means of spur gearing. Two drums 5 ft. in diameter and 2 ft. 6 in. wide, loose on their shaft, are fitted with jaw-clutches, and the shaft is extended beyond the drums to carry the pump-crank and pin. The crank is so made as to permit of the pump being worked with a variable stroke of 4 ft., 5 ft., or 6 ft. From the drums two crucible steel-wire ropes pass over pulleys 5 ft. in diameter, fixed at a height of 50 ft. above the shaft-collar. The poppet-legs and bracing are of round blue-gum, other timber used being heart of red-pine, with the exception of guides, which are of kauri. The landing-brace is 20 ft. above the ground-level, and along the northern end of the brace an ore-bin is erected capable of holding 90 tons of quartz. The pit-cages are of steel, with Ormerod's patent disengaging hooks to prevent overwinding, and safety-catches to hold the cages in case of breakage of the winding-rope. Fallers are provided on which the cages rest at the different levels and at the landing-brace. The mine-trucks are of 15-cubic-feet capacity, and those used for transport of quartz to battery 16 cubic feet. From the shaft-head an 18 in. gauge tram-road 37 chains long leads to the battery, where the quartz is tipped on to a grizzly, through which the fine stuff passes on to a shoot, which carries it into an ore-bin of 90-tons capacity. Quartz which will not pass between the grizzly-bars is deposited on a floor, and is fed into a Blake-Marsden rock-breaker, from which it goes direct into the bin. The floor of this bin is sufficiently steep to allow of the ore passing through bin-gates, which regulate the supply of ore, to two Challenge feeders, and from these it is fed into two mortar-boxes of the Homestake pattern, where it is pulverised by ten head of stamps, the falling weight of each of which is 1,250 lb., and the maximum speed ninety-eight drops per minute. The pulp from the mortar-boxes passes over amalgamated copper plates 12 ft. long by 4 ft. 9 in. wide. From these it drops on to another stepped plate 3 ft. long, and then passes through a baffle-box and over a blanket-table 6 ft. long. The blankets are washed out in tubs, and the concentrates thus saved are paddocked for future treatment. A grinding-pan is used for cleaning up, and two Union vanners are now on their way to the mine to be put in operation as soon as they can be erected. For driving the machinery steam is supplied from one of two Cornish boilers 24 ft. long and 6 ft. 6 in. diameter, with 3 ft. 6 in. diameter flue, in which are four Galloway cone-tubes. Feed-water is supplied to the boilers by a Manchester single-ram pump. The engine is a 30-horse-power horizontal high-pressure one, with 15 in. cylinder and 30 in. stroke, and can be driven at eighty revolutions per minute. A counter-shaft driven by an 8 ft. pulley connects the battery, rock-breaker, and clean-up pan with the motive-power, leather belting being used in all cases for the transfer of motion from one shaft to the other. Six-feet fixed pulleys on the cam-shafts, with two keys, are strongly built of wood, and are set in motion from 3 ft. pulleys on the counter-shaft. The battery framework is of the Highbank type, constructed entirely of pitch-pine, the foundations for each mortar-box being of the same timber in eight pieces 12 ft. long, securely bolted together. The battery and machinery were turned out by the Sandycroft Foundry Company, of Chester, England. The boiler, engine, and mill are housed in buildings of corrugated iron on substantial framework of red-pine timber. Water is supplied from tributaries of the Waipori River by a race eighteen miles long. In connection with the battery there is a small assay plant and smelting-furnace, where all ore is tested before being sent to the mill for treatment."

Mr. A. E. Inder is superintendent, Mr. G. M. Steedman mine-manager, and Mr. Clement Dixon battery-manager.

Bullendale.

The old Phœnix Mine, now owned by the Achilles Gold-mines (Limited), is being worked on the lines described by me in my report on the quartz-mines of Otago for 1898. The incline shaft, which is sunk on the north lode, was down 627 ft. (or, say, equal to 500 ft. vertical) at my visit in November last to No. 6 level, which was being driven east and west on the north lode, and it was expected that payable ground would be soon opened up. I was informed that it is intended at an early date to crosscut to the south or old main lode, and also to resume sinkings for a lower level. A new 8 in. Cornish pump (draw-lift and plunger) has been erected. This raises the water to the adit-level. For the year ending the 31st December last 1,275 tons of stone was crushed, for a yield of 795 oz. 16 dwt. 1 gr. of gold; value, £3,063 17s. 3d. Mr. N. C. Morcom, the superintendent, has returned to England. He is succeded by his late assistant, Mr. J. S. Cherry. Mr. Green, Inspector of Mines, accompanied me to the mine. Whilst underground we found great laxity on the part of the men in regard to the handling of explosives, and the requirements of the safety provisions of "The Mining Act, 1898," deliberately violated. During my term of office as Inspector of Mines for the district I had, prior to the *régime* of the present management, drawn attention to this. As the warnings then given had been disregarded, it was pointed out to the manager that he had no alternative but to prosecute the offenders. Two of the miners were accordingly charged with the offence, and fined by the Stipendiary Magistrate at Queenstown. Mr. Cherry, the superintendent, has kindly given me the following items of interest as to the 31st March last:—

"During the past year our principal operations have been confined to the bottom of the mine. The sinking of the incline shaft below No. 5 level was resumed at the end of March, 1899, and continued to a further depth of 110 ft., making a total depth on the underlie of 637 ft. Owing to numerous drawbacks, and the opening-up of the old intermediate level (which is 38 ft. below No. 5, and east of the incline shaft), this work was not accomplished until September. Leaving 10 ft. for a sump, a plat was cut for No. 6, 627 ft. from surface, and levels driven east and west on the course of the lode. Driving west from the incline shaft the forebreast has attained a distance

of 195 ft., while the eastern end was driven 180 ft. The lode throughout these lengths has varied in width, widening out at times to as much as 6 ft., but the ground passed through has been unproductive. A winze is at present being sunk in the bottom of No. 6 level west (north lode) in order to prove the value of the lode in depth. West of the incline shaft a crosscut has been driven from the north lode, and the south or old main lode intersected at a distance of 90 ft. We have started to drive east and west on its course. A little prospecting-work was carried out in the upper levels. Throughout the year sundry trial crushings were made from various parts of the mine, while a considerable amount of ground was stoped from the back of the intermediate level. The quantity of ore crushed was 1,664 tons, from which we obtained 844 oz. 14 dwt. 1 gr. melted gold, valued at £3,252 2s. 6d. sterling. A new 30-horse-power electric motor has been placed in position near the brace of the incline shaft to do the pumping and winding when the water-power from the upper ditch fails. This usually happens during the severe frost, and also for a short time in the summer."

Skipper's Point.

The low level of the Shotover Quartz-mining Company's claim (formerly known as "The Gallant Tipperary Mine") has been steadily continued, with the object of cutting the block of stone referred to in my last year's report.

Macetown.

Premier Mine (the Glenrock Consolidated Company, Limited, owners; mine-manager, Mr. W. Patton).—During the year the main incline has been steadily continued, and at my visit in November last was down 1,200 ft. from the adit-level. The average grade of the incline, which follows a flooring of the reef, is 1 in 4. When I visited the mine in May, 1899, the face was carrying stone 1 ft. 2 in. wide, and the principal output was from a leader of quartz on the hanging-wall side. This has been since exhausted, and the stone in the incline also pinched out. The incline was, however, being continued on the same grade at the time of my last visit, but up to that time had not cut any fresh stone, although the lode-track is, so far, continuous. A short crosscut on the foot-wall side, near the bottom of the incline, had just met with some quartz which was being opened out upon in two working-places. It is to be hoped that this find will yield a good supply of stone. In consequence of the recent falling-off in the available quartz, the mine has perforce been worked by a reduced number of men. As the reefs of the district are known to be somewhat patchy, the drawbacks of the past few months need not be taken too seriously. Mr. Stanford, the late general manager, having accepted an appointment in Rhodesia, I have been favoured by Mr. Patton with the following report for twelve months ending the 31st December, 1899:—

"*Incline.*—Work has been carried on continuously during the year. For the twelve months 235 ft. has been driven, and the tunnel measured 1,214 ft. on the 31st December, 1899. The cost of driving this 235 ft., all expenses included, came to £714 15s. 2d., or an average of £3 per lineal foot to drive and timber. During the year the tunnel was not on gold, the stone being on the back of the tunnel, on the foot-wall. The ground was hard, but required timbering throughout, which made the expense very heavy. The grade of the incline has not been altered, being still continued at the original grade—1 in 4. By keeping this grade we keep considerably under the stone, which is to our advantage. During the year 2,825 tons of quartz has been crushed, for a total yield of 1,661 oz. 10 dwt. 2 gr. smelted gold, valued at £6,689 2s., giving an average yield of 11 dwt. 18 gr. per ton crushed, the highest yield being 1 oz. 2 dwt. 13 gr. in November, and the lowest in October—7 dwt. 2 gr. To obtain this 2,825 tons a great amount of unproductive work had to be done, owing to the reef close to the incline having run very small, and the top or foot-wall chute gave out altogether during the months of October, November, and December. After a lot of crosscutting and prospecting in various ways we have succeeded in discovering a small body of gold-bearing stone, which we have had opened up and are now stoping. This chute of stone is very small, both in width and depth, and the country through which it passes is much broken, thus making the expense of stoping very great, and our output of quartz small. Prospecting in the mine for a new chute has been carried on in the old high-level adit up to the end of April, but without success, and was discontinued owing to the revenue from the mine being insufficient to pay for the work. At the end of April the tunnel measured 2,172 ft., giving a distance of 59 ft. for the year. The country here is not of a promising nature, but the work of prospecting will no doubt be proceeded with when funds are available. During the year the mill ran 125 days 21 hours. During the greater part of that time fifteen heads of stamps were kept running. The supply of stone being short for part of the time, only one shift, of eight hours daily, could be kept going. The gold returns for the year show a large falling-off as compared with 1898, which is accounted for by the very small reef to be operated on and the difficulties attending it. The gold from the concentrates, treated by the cyanide process, show a gradual increase, and from 62 tons treated 276 oz. 12 dwt. 15 gr. was obtained, valued at £925 15s. 4d. The financial result of the year's operations has, on the whole, been satisfactory. The mine has paid its way from start to finish, and remitted a sum of £2,024 8s. 2d. to the London office. In addition to this, we have spent £714 15s. 2d. on Mine Development Account, or the driving of the incline; £28 18s. 5d. on New Plant Account; and £275 19s. 6d. on Prospecting Account (high level), all of which works are chargeable to capital. On Mining Account—that is, rising and stoping—the sum of £2,321 7s. 9d. has been spent to obtain 2,825 tons of quartz, or an average of 16s. 5d. per ton. To mill this quantity it has cost £497 18s. 8d., or an average of 3s. 6d. per ton. The total expenditure on revenue accounts for the year, all charges, amounts to £4,636 2s. 1d., an average of £1 12s. 9d. per ton. The total expenditure on the mine for the twelve months amounts to £5,696 7s. 10d., or an average of £2 0s. 3d. per ton mined and milled. I enclose a tabular statement of returns for 1899, month by month."

The following table gives the quantity of ore stamped, the tailings treated, and the gold produced for the year:—

Month.	Quartz stamped.	Bar-gold extracted.	Produce per Ton of Quartz.	Tailings by cyaniding.		Total Value.
	Tons.	Oz. dwt. gr.	Oz. dwt. gr.	Tons.	Oz. dwt. gr.	£ s. d.
January	240	190 8 0	0 15 20	...	...	764 15 9
February	390	181 4 4	0 9 8	42	192 19 12	1,365 14 2
March	455	306 12 12	0 13 11	...	...	1,236 11 0
April	265	152 1 15	0 11 11	20	83 13 3	903 4 2
May	325	219 17 10	0 13 12	...	...	888 7 8
June	315	165 12 21	0 10 12	...	...	668 6 9
July	155	71 12 4	0 9 5	...	...	282 13 11
August	205	91 11 20	0 8 22	...	...	368 17 4
September... ...	255	129 13 18	0 10 4	...	...	522 9 1
October	130	51 2 0	0 7 2	...	...	205 4 5
November	90	101 13 18	1 2 13	...	...	408 13 1
December	...	...	...	...	...	...
Totals ...	2,825	1,661 10 2	...	62	276 12 15	7,614 17 4

Sunrise Mine.—This mine is situated on Advance Peak, at an elevation of 4,600 ft. above sea-level, and is on a different line of reef from the Premier, and about a mile from it in a north-easterly direction. It was worked by a small local company for about four years, during which time some very good returns were obtained, as high as 3 oz. per ton; but, like all the other lines of reef here, the stone was in small blocks, and not easily traced. When worked to a depth of 180 ft. from the surface the ore became much poorer, and only 9 dwt. per ton was obtained. This return would not pay, as the ore had to be conveyed on sleighs from the mine to the mill, a distance of about a mile and three-quarters. This company then sold the property to the Glenrock Consolidated (Limited) for the sum of £750, who then carried on prospecting-works during the summer for three years. I understand it is the intention of the company, as soon as possible, to construct a deep-level tunnel at a probable cost of £8,000 so as to work the mine cheaper, and am informed that there is no doubt that the locality is a very promising one, and is likely to pay. From this mine about 1,200 tons of ore was treated, for an average yield of over 1 oz. to the ton. Nothing is being done here at present.

Tipperary Mine (Westralia and New Zealand Gold-explorers Company, Limited).—The mine was shut down at my visit. Mr. Stanford, the general manager of this and the Premier Mine, had gone to England to consult with the directors of both companies as to future developments, and was expected back early in 1900. The following account of this property will no doubt be of interest:—

"The Tipperary Mine is on the same line as the Victor Emmanuel, and belongs to the Westralia and New Zealand Gold-explorers (Limited). When first taken up it was worked by a company called the 'Tipperary,' and for six years gave rich returns. The width of the reef was from 3 ft. to 6 ft., giving an average yield of 1½ oz. per ton. The works were carried on by tunnelling and stoping down to the creek-level. Afterwards, when all the available ore from the back of the levels was worked out, a winze was sunk from the then low level to a depth of 280 ft., the hauling-power being a water-balance. The gold returns from this part of the mine were very good to a depth of 180 ft., when the ore gradually got poorer. The ore-body still continued, but was found to be too poor to pay, owing to the very expensive mode of working. The mine was then closed down for a time, as it was found that a deeper level would have to be put in, which would cost a large sum of money. It was therefore decided by the shareholders to put the property on the London market for flotation, which was successfully carried out, and was taken over in 1893 by the present company, who carried the required deep level through, and also a very large amount of prospecting-work and stoping, which, however, proved unsuccessful; consequently the mine was closed down about twelve months ago. It is the intention of the company to resume work as soon as sufficient capital can be procured, as there is a very promising body of stone known to exist underneath the floor of the low level, which may yet prove valuable. The crushing-power in connection with this mine is a ten-stamp battery worked by a turbine. The mine and mill are connected by a tramway, and the ore is delivered at the mill by horse-haulage."

Mr. W. J. Farrell holds several properties at Macetown. Nothing is being done at any of them at the present time. I am indebted to Mr. W. Patton, whose local knowledge and experience is to be depended on, for the following particulars:—

"*Golden Link.*—This claim, which is on the east boundary of the Premier Mine, was worked by a tunnel from the Sawyer's Creek level. Here only one small block of stone was discovered (about 70 tons), the yield of gold being about 2 oz. to the ton. This being only a surface block was soon worked out, and after a little further prospecting was abandoned. A short time afterwards Mr. Farrell included this with the Ladye Fayre and Homeward Bound in his lease.

"*Ladye Fayre.*—This mine is on the same line, and has been worked by tunnelling and stoping to a depth of 150 ft. The ore-body varied very much in size—from 3 ft. down to 6 in. The total output of stone when the reef cut out was (approximately) 700 tons, and the average yield per ton was 1 oz. 5 dwt. After the reef floored very little prospecting was done, and the claim was

abandoned. It is probable this mine would yet pay if a deeper level was put in, and carefully worked.

"*Homeward Bound.*—This mine, also on the same line, was worked by tunnelling and stoping from three different levels—namely, the upper, intermediate, and lower—the distance between the levels being 100 ft. The ore taken from the top (upper) and intermediate levels was of good quality, yielding on an average 1 oz. per ton, but the reef was very blocky and hard to trace, which added very much to the expense of working. In the lower or No. 3 level the ore was not so good, being worth only 9 dwt. This level, although driven a distance of 700 ft. from the entrance, found only one chute of stone, 40 ft. in length and 2 ft. in width. The reef from the back of this level was all stoped out, but being of rather poor quality was not considered payable; consequently the mine was shut down. Although it was proved that the ore-body was going under the floor of the level, it was not at that time (about fourteen years ago) considered payable at 9 dwt. The crushing-power was a ten-stamp battery worked by an overshot water-wheel. The plant consisted of an incline double-tramway from the mine to the mill, the trucks being self-tipping. If a lower level were put in (which would cost about £700), this mine would be most likely to pay with the assistance of a cyanide plant.

"*Victor Emmanuel.*—This mine is on a different line of reef to the Homeward Bound, being about half a mile to the south-west, but running parallel with it in a north-west direction, and was worked on the same principle as those just referred to. The body of ore, when the reef was first discovered, was small, being about 1 ft. in width, but was of very good quality, giving a yield of from 1 oz. to 4 oz. per ton. On being traced the quality of the stone gradually got poorer, until at last it was found to be unpayable, and the mine was shut down. The total quantity of ore treated from this mine was only 500 or 600 tons, which was carted to a neighbouring mill for treatment. The prospects of the mine are not very encouraging.

"*Garibaldi.*—This mine, which is on the same line as the Victor Emmanuel, was worked by tunnelling and stoping; but, as far as the ground was worked, the reef occurred in small blocks. Some of these blocks gave good returns, as high as 3 oz. per ton. The average value of the ore taken from the mine was 1 oz. The total quantity crushed was about 500 tons, which had to be sleighed from the mine down to Bush Creek, about three-quarters of a mile. It was then conveyed in a dray to a mill three miles away. This added to the expense of treatment, so much so that less than 1 oz. to the ton would not pay. There is at present in sight in this mine a large body of ore from 6 ft. to 8 ft. in width which is only worth from 4 dwt. to 5 dwt. A large crushing-power, worked in the most economical manner, would be necessary here in order to secure payable results.

"*All Nations.*—This mine is on a branch of the same line, but junctions with the Garibaldi close to the Maryborough boundary. The stone was of good quality when first discovered, but the gold was very patchy, and, owing to the great expense of conveying the ore to the mill, was found to be unprofitable. The ore-body itself was very small and expensive to work; therefore the mine was shut down. Gold-bearing stone was traced below the floor of the level, and, as the average return was 15 dwt. per ton, this mine is worth another trial, providing better facilities for milling were provided.

"*Maryborough.*—This mine takes in the two lines of reef which have been traced by the Garibaldi and All Nations Companies, and, like some of the others, was very rich for a time. The body of ore was from 1 ft. 6 in. to 2 ft. in width, and on one occasion 250 tons gave 1,100 oz. of gold. This was got from the surface workings. The company, after getting this good return, had a low level put in and cut the reef formation, but were not successful in striking any payable stone, and after prospecting for a few months shut down.

"Mr. Farrell's intention is to form two companies, one to take the Golden Link, Ladye Fayre, and Homeward Bound, the other to take the Victor Emmanuel, All Nations, Maryborough, and Garibaldi; each of these two properties to be worked from a deep level, one to be entered near the creek-level on the east boundary of the Homeward Bound, and the other to be on the creek-level on the east boundary of the Victor Emmanuel. This undertaking would cost a very large sum of money, but there is no doubt that if carried through it would turn out a very large amount of gold, and the cost of conveying the ore to the mill would be very small."

Carrick Range.

Messrs. Lawrence continue to work in a small way at Day Dawn and Star of the East Claims, also at their claim at the head of Adams's Gully. There is nothing of special importance to report.

Jones and Pryde are prospecting a reef at the head of Adams's Gully. The outlook is said to be encouraging. Holliday and party (the Go-bye Company) are still driving, and have struck a leader, which is being opened out.

Rough Ridge and Ophir.

Nothing has been done at these places during the year so far as I am aware.

Dunstan Range.

Cromwell Proprietary Mine, Bendigo.—At my visit in November last the mine was idle. Mr. J. A. Dobson, the resident manager, informed me that operations were vigorously prosecuted during the earlier part of the year, but that owing to various difficulties the work of the past few months had been less satisfactory. During 1899, 1,264 tons of stone was treated, for a yield of 827 oz. 5 dwt. of gold, sixteen persons (including tributers) being employed in and about the mine.

The sinking of the new shaft on the eastern side of the property has been continued, and a crosscut driven to the reef. Operations here have been suspended for some time, as it was found

necessary to adopt machinery for winding in order to allow of the shaft being sunk to the desired depth. Mr. Dobson states that the proprietary has this matter, and the question of other important development-works, under consideration, and it is probable that works on a fairly extensive scale may soon be put under way. Ever since my first visit to this mine I have been favourably impressed with the possibilities of the property, provided it is worked on more comprehensive lines than hitherto.

Old Man Range.

Work at the quartz-mines owned by Mr. F. W. Gray and Mr. R. J. Symes respectively has been steadily carried on, with good average results. Operations are suspended for the time being at the claim of Messrs. Holden and Gray.

Preservation Inlet.

I visited this district in April, 1899, and inspected the several mines at work—viz., Morning Star, Sunrise, Alpha, Golden Site Extended, and Tarawera—and my remarks on these may be given *seriatim*.

Morning Star.—Since my previous inspection a change has taken place in the working management, Mr. J. E. Davis having resigned. His successor is Mr. P. E. Leam. In my report last year as Inspector of Mines for the southern district I pointed out the uncertain nature of the reef, and urged the immediate need for further prospecting by extending at least one of the drives with all possible speed. This has been done to some extent, No. 1 level having been extended from 591 ft. to 1,100 ft., at which distance it is in lode formation, but without any stone in the face. A block of stone 200 ft. in length was passed through, which gradually got smaller overhead, being only 132 ft. long in No. 1A level, which is 138 ft. higher than No. 1 level. The average width of this stone was 6 in., and yielded ½ oz. of gold to the ton. No. 2 level has also been continued to 939 ft., but no payable stone found. I estimate that all the payable stone in sight can be stoped out in two to three months. Unless further prospecting is promptly undertaken and vigorously prosecuted, the future prospects of this mine are practically nil. Good returns were made for some time, and, although the ground is patchy, it is not unlikely that another run of good stone may yet be found. Forty-one persons were employed at date. Advices to end of March confirm the opinions above expressed. The stone in sight got practically worked out, the manager left, and the mine was practically closed for some time. Work was recommenced on a small scale after Christmas. No. 1 level has been continued without meeting with payable ore. Payable stone has been got in No. 2 level, and is being stoped.

Sunrise Mine.—This property adjoins that of the Morning Star Company. At the latter mine the reef alters its course somewhat, taking a bend towards the Sunrise Claim. It was thought that this altered course might prove to be continuous, and a tunnel was commenced with the object of cutting the reef near where it was assumed that the line of the observed altered course in the Morning Star Mine would cause it to cross the boundary-line separating the two claims. Subsequent developments, however, show the reef to again bend round to a line practically parallel to that first proved; and it now appears evident that this reef will not be cut in the Sunrise Company's tunnel, which is 620 ft. in at date (April, 1899). If parallel reefs to that worked at the Morning Star Mine exist, this tunnel may perhaps be useful as a means of proving such. Two other tunnels have been started, but are not at present working. At one of these a reef has been cut, giving about 6 ft. of stone in two divisions of, say, 3 ft. each, separated by a band of mullock about 2 ft. wide. Since my visit work has been stopped.

Alpha Mine (Secretary, Mr. H. A. Bruce, Christchurch).—This is a new mine, the shaft being sunk under the superintendence of Mr. John Wilcocks, who has recently left here to take charge of the Tarawera Mine, at Isthmus Sound, Preservation Inlet. Mr. David Hughes is now in charge as mine-manager. The shaft has been sunk 133 ft. (No. 1 level being at 56 ft. and No. 2 level at 130 ft.), and is log-framed and divided into three compartments, one of which is used as a ladderway. A chamber has been excavated at No. 2 level, and a crosscut driven from thence to cut No. 2 reef. This appears about 18 in. wide, and of very low grade. At the time of my visit a crosscut was being driven from the shaft-bottom in an easterly direction to cut No. 1 reef, which was worked to a limited extent at No. 1 level. At the shaft this reef was 12 ft. wide, but does not maintain its width, the average, so far as is proved, being about 5 ft. It is of low grade (the best crushing gave a return of 5 dwt. of gold per ton), and said not to be refractory. It is proposed to continue the east crosscut in the hope of meeting with parallel reefs. The country-rock appears to stand very well. Timbering and ventilation were very satisfactory, but some improvements are necessary in the ladder-way; also fences required at top of shaft and at No. 1 level. Mr. Hughes had only been in charge for a few days, but promised to attend to these matters promptly. A ten-head battery has been erected; weight of each stamp, 420 lb. There are also two berdans. All the plant, winding machinery included, is driven by water-power, two Pelton wheels being used. The manager reports (under date 22nd March, 1900) that since my visit prospecting has been carried on in the bottom or No. 2 level, the crosscut going east having been driven 195 ft. without meeting payable stone. No. 1 reef was picked up at this level after being displaced by a slide, and driven on for 50 ft. on the foot-wall without any prospects of gold being obtained. A crosscut towards the hanging-wall proved gold-bearing stone. This was driven on for 80 ft., the value of the stone at a trial crushing being 3½ dwt. per ton. Both reef and country-rock are very much broken.

Golden Site Extended Gold-mining Company, Limited (Secretary, Mr. R. Allen, Invercargill; manager, Mr. W. Wylie).—The company's holding comprises five claims, viz.: Break of Day, 30 acres; Heather Bell, 30 acres; Golden Site, 29 acres 3 roods 17 perches; Christmas Eve, 29 acres 3 roods 2 perches; Hesperides, 24 acres 2 roods 14 perches: total, 144 acres and 33 perches. The mine-works and battery are on the Golden Site Claim, adjacent to the bank of Wilson's River, and about eight or ten miles from the river-mouth. The shaft is 12 ft. 6 in. by 4 ft.,

divided into three compartments. Winding- and pumping-gear are driven by water-power through the medium of a 5 ft. 6 in. Pelton wheel, working under a head of 50 ft. At the shaft-bottom a roomy chamber has been excavated and thoroughly well timbered. All driving is to the south of the shaft. So far three distinct reefs are known—viz., the Golden Site, the Red Reef, and the New Lode—their general strike being north-north-west to south-south-east, with an easterly underlay of very variable inclination. The main level was driven on the Golden Site reef for some distance from the shaft, when it was found that the reef became split up into a series of stringers, and to take a more easterly direction. The level was then continued in lode formation to its present end (a distance of about 350 ft. from the shaft), where a rise has been put up in the same lode-track, which contains very thin quartz. This rise, having been continued to the surface, will be used as an airway and passage-way for men and mining material. At 70 ft. above the shaft-level a crosscut was driven from the rise referred to, and has cut what is thought to be the New Lode, on which a level (known as the "intermediate level") has been driven in both directions. The reef appears to be considerably knocked about, and a lode-track of considerable width carries stringers and bunches of quartz. The payable stone is generally got next the foot-wall, but is not continuous; it breaks off, leaving blank patches, then takes on again. Owing to the very patchy nature of the reef the stone cannot be kept clean, and it is estimated that fully half of the stuff put through the battery is mullock. The best return yet obtained is 11 dwt. per ton of gold; value, about £4 per ounce. The battery consists of ten heads of stamps of 600 lb. each and two berdans, the whole being driven by a 5 ft. 6 in. Pelton wheel, working under a head of 50 ft. Four heads of water are brought in from Wilson's River, and as developments proceed it is intended to cut another race at a higher level so as to get the water at a greater pressure. Twenty-four persons employed. Since my visit there have been two changes in the management, Mr. Wylie being succeeded by Mr. A. Whitley, of Thames. Recent advices state that Mr. Whitley has left, and that Mr. John Hawkins is in charge, only six men being employed at end of March. Work at the shaft, with the exception of keeping the workings drained, has been suspended, and actual mining operations are now confined to surface drives. A small block of stone near the surface was stoped out, but did not prove payable. As the Hesperides reef shows a strong outcrop at surface, an adit was driven to cut it at 80 ft. deep. It was here found very much broken, and a trial crushing gave unsatisfactory results. A level driven on the lode to the south was in 130 ft. at end of March, but no improvement is shown at this distance. Prospecting is still going on.

Tarawera Gold-mining Company, Isthmus Sound (H. A. Bruce, Christchurch, secretary; J. Wilcocks, manager).—The company have recently sunk a shaft here. It is situated very near the water's edge, 30 ft. above sea-level, and is 80 ft. deep. Winding- and pumping-gear have been erected, and are driven by a 4 ft. Pelton wheel, working under a head of 75 ft. The pump is a single-acting ram, 6 in. diameter by 3 ft. stroke. A crosscut driven for a distance of 42 ft. from the shaft in a northerly direction cuts the reef, which is from 2 ft. 6 in. to 3 ft. wide, and runs east and west, with an underlay south, and an inclination of about 65° from the horizontal. The reef was found cropping out near the water's edge. It is highly mineralised, containing silver, copper, galena, &c., as well as gold, and the stone will have to be shipped to a reduction-works for treatment. The proximity of the shaft to deep water favours this arrangement. At my visit very little was being done, pending a thorough metallurgical test of the stone being made. From what I could see the country-rock is likely to be more settled and regular here than at the opposite side of Preservation Inlet (Morning Star and other mines), and is of a totally different character.

Crayfish Island.

Messrs. Robinson and Williams have been prospecting by surface-trenching, and I was informed recently (April, 1900) that a reef 18 in. wide, showing gold freely, had been discovered. No trial crushing had been made up to the time of my information, therefore its value was not known.

Cuttle Cove.

Some prospecting-work has been done here. I was unable to visit the place without missing the steamer, and being detained for two or three weeks in consequence, but have since learned that a trial crushing of 5 tons of stone obtained yielded 1 oz. gold to the ton. I have no information as to size of reef.

Gold-saving at Quartz-mines.

Mr. L. O. Beal, jun., mining engineer, of Dunedin, writes: "The following has come especially under my notice during the past year: Where there is clean stone in quartz reefs, or even fairly clean stone, a fine grinding and amalgamating process, such, for instance, as is accomplished by Messrs. Price Brothers' (Thames, New Zealand) patent pan, should—or, rather, could—be adopted with very satisfactory and payable results. Small pieces of cyanide of potassium and a little lime should be put in the pan every few hours to assist the quicksilver, and minimise the flouring action, which is sure to occur to some slight extent. From actual experience I have found the yield of gold increased about 15 per cent."

Mr. Maltman, manager of the Globe battery, Reefton, has introduced and patented a system of canvas-covered tables for treating tailings. This is at work with satisfactory results at the Globe battery. A Wilfley concentrator has also been adopted in connection with battery extensions, and is said to be greatly superior to the ordinary vanners.

A novel method of saving gold from tailings (says the *South African Mining Journal*) consists in the employment of a funnel-shaped vessel, with the small end downwards, in which a quantity of water is placed, with a quantity of kerosene on top of it. The tailings are put in from above, half a ton at a time, and the agitation of the fluids causes the separation of the gold, which, for some unexplained reason, takes up a position in suspension between the kerosene and the water.

ALLUVIAL AND HYDRAULIC MINING.

Southern District.

Livingstone.

Twenty miners have been employed in sluicing operations during the year. Owing to a fairly wet season the water-supply has been good. Lost time, principally due to severe frosts, amounted to about six weeks. Water is brought on to the field by—(1) the Mosquito Race, owned by Mr. J. F. Christian, twenty-five miles in length, and having a carrying-capacity of ten heads; (2) Mr. Cook's race (at a lower level), twenty-three miles long, carrying three heads (these races are from the south branch of the Maerewhenua River); (3) Mr. McQuade's race, fifteen miles in length, and carrying three heads; and (4) Mr. B. Yeoman's race—the Golden Hill—ten miles in length, and carrying two heads and a half (both the latter obtain their water from creeks). £1 per head per week is charged for water, the claims working at daytime only.

Within the last couple of years it has been found that some of the layers in the false bottom (below the greensand formation) are gold-bearing. These are being worked in some places, but for want of sufficient fall for tailings the main bottom cannot be worked down to. I am informed that where main bottom has been touched the prospects were rather poor.

No new ground is available to the present tailings-channel (the Maerewhenua River), but it was pointed out to me at my visit to the locality in November last that, in the event of the Awamoko being proclaimed as a sludge-channel, there are terraces which could be commanded by the water now brought on to the field, and which, if thus made available to the miners, would give a new lease of life to the locality. Without this, Livingstone must rapidly cease to exist as an alluvial gold-mining centre of any importance, as the area now being worked will soon be exhausted.

The Awamoko Flat, at the foot of the terraces referred to, has been taken up for dredging purposes by the Premier No. 1 Gold-dredging Company (Limited), and it is expected a dredge will be set to work there about the end of this year.

Hyde and Middlemarch.

Taieri Gold-sluicing Company, Hyde (Secretary, Mr. A. Bartleman, Dunedin).—The claim is situated about three miles above Hyde, on the northern bank of the Taieri River. Terrace ground, composed of alluvial deposit among the rocky schist country at the base of the hills above the river, is being worked by hydraulic sluicing. At my visit the face showed a thickness of, say, 15 ft., from 6 ft. to 10 ft. of the upper portion being clay underlaid with heavy stones (mostly basaltic), broken schist and quartz, and washdirt. The claim has been at work since 1898, but during the summer of 1898–99 was stopped for a time owing to a shortage of water. A stoppage of five weeks was also caused by the severe frosts of last winter. Gold-saving is effected by a run of sluice-boxes laid on the ground. Stones are forked back, and the fine material is discharged into the Taieri River. A race three miles long, constructed to carry twelve heads, brings water from Capburn Creek. Pipe-line is about 60 chains long. Pressure at nozzle equal to a head of 130 ft.

Hibernia Claim, Sutton Tanks, near Middlemarch.—This claim is worked by hydraulic sluicing. The ground is similar in character to the general run of the auriferous alluvial ground of the Taieri watershed, and does not call for special comment.

Naseby.

The water from the Government race has been supplying nine elevators, besides a number of ground-sluicers, whose operations are conducted on a lesser scale. In addition to this source of supply there are six private races—viz., Enterprise Company, Cooper's, M. Young's, J. Horn's, S. Hewitt's, and the Hit or Miss Company—supplying water at a higher level than the Government race commands. From two of these—the Hit or Miss Company and Hewitt's—water is sold when the supply exceeds what is required for their own operations. The Government race supplies on an average about fifty miners throughout the year. Wheeler and party are still elevating at Idaburn. Two elevators are being placed in position in Enterprise Gully in readiness for the spring. One of these (E. Hall and party) will take its supply from the Government race, making ten elevators supplied by it; the other will be worked with water from Cooper's race, which has, I understand, been rented by the owners.

Dredging.—Up to the present this class of mining has not been a success, owing to the nature of the ground being unsuitable for dredging. The Naseby Company's dredge has been sold to the Golden Spec Company, and shifted to the claim in Spec Gully Valley. Operations having just commenced, it yet remains to be seen whether the venture will be profitable or not. The Naseby Company, whose claim is situate in the Main or Hogburn Gully, now relies entirely on its elevating plant, experience having proved this to be the more profitable mode of working their ground. The Enterprise Company have sold the dredge which they had working on their claim in Enterprise Gully for removal to Gore. At Spec Gully the Spec Gully Dredging Company has a dredge in process of construction to work ground adjoining Golden Spec Claim, and it is expected to be at work at the end of April.

Blackstone Hill.

There are only a few parties working in this locality, and the operations are not very extensive, all being engaged ground-sluicing, and these, with the exception of a few miners at Sam-the-German's Gully, obtain their water from the Blackstone Hill Race, the number thus supplied being eight. One party at Sam-the-German's Gully is reported to be doing well.

Hamilton's.

There is really nothing to report concerning these old diggings, which appear to be almost abandoned, there being only two parties at work—viz., the Perseverance (employing four men) and the Roberts family. Both parties are engaged ground-sluicing, and are said to have enjoyed a fairly good water-supply.

Sowburn and Patearoa.

On the Sowburn Creek five parties of Europeans and a few Chinese are ground-sluicing, some of the latter being likewise engaged on the Pigburn Creek, all, it is understood, with favourable results. Hambly Brothers, at Patearoa, have been ground-sluicing in the one claim for the last thirty years.

Kyeburn.

At Upper Kyeburn there are nine parties of Europeans, aggregating twenty-six men, also three parties of Chinese ground-sluicing. At the Little Kyeburn there are about half a dozen parties sluicing, and an elevator is being placed by Parfit and Son on their claim in this creek.

Dredging.—As in other portions of the Naseby district, I regret to say that dredging has not so far proved a success in this locality. Both the Kyeburn and Mount Ida Companies have been forced to sell their dredges, the former company's dredge going to the First Taieri Claim on the Taieri River near Middlemarch, and the latter's to a claim on the Shag River. Another portion of this district is, however, to be shortly tested. The Naumai Company are having a dredge built on their claim on Church Flat, Upper Kyeburn, and it is expected to be finished about the end of May. I have seen some splendid prospects which were obtained from this claim.

Mount Buster.

The Messrs. Inder are still working their claim with satisfactory results.

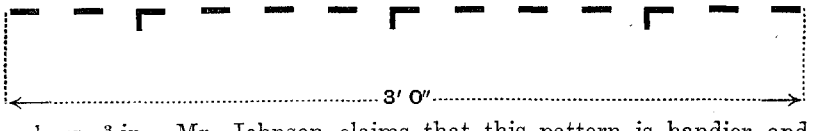
Eweburn.

The large storage-reservoir is almost complete, and has already proved of service.

Though there has been no prospecting of any importance done during the year, the exceedingly good water season has caused mining to be briskly carried on, and given fairly good employment to miners in every portion of the district throughout the year.

Waipori.

Bakery Flat Sluicing Company (Limited), Waipori (Secretary, Mr. A. J. C. Brown, Dunedin; claim-manager, Mr. J. Johnson).—An area of 84 acres is held. Ground averages 16 ft. deep to a false bottom of yellow clay. About 1 ft. 6 in. of wash next the false bottom is richest in gold, although the gravels above this also carry a little. Overlying clay varies from 1 ft. to 4 ft. in thickness. Method of work: Hydraulic sluicing and elevating. Eight persons are employed. The water-supply is as follows: From Deep Stream, twenty-eight miles of race; from Nardoo Creek, three miles of race; from Stony Creek, four miles of race; from Burnt Creek, four miles of race: total, thirty-nine miles of race, carrying an average of fifteen heads. Also twenty-six miles of races are leased from Slater and Nicholson: these carry five heads. Penstock is 300 ft. above claim, and the main pipe-line over 700 yards long, in lengths and diameters as follows: 80 ft., gradually reduced from 36 in. to 15 in. diameter; 1,500 ft., 15 in. diameter; balance, 13 in. diameter, with some 800 ft. of 9 in. branches. Sluicing-jet is 2½ in. diameter; elevator-jet, 2¾ in. diameter; throat, 8 in. diameter; uptake-pipe, 12 in. diameter; height of elevator, 30 ft.; boxes, 60 ft. long by 3 ft. wide. The ripples are in 3 ft. sections, shaped as under:—



Space between bars, ¾ in. Mr. Johnson claims that this pattern is handier, and not so easily choked as a ripple constructed entirely of angle-iron.

O'Brien and Party's Claim, of 16 acres, is about half a mile above Bakery Flat Claim. Four men are employed. The nature of the ground is very similar to that at Bakery Flat, and the method of work is by hydraulic sluicing and elevating.

Lammerlaw Flat Hydraulic Mining Company, Waipori.—Mr. W. Knight is manager and secretary to this company (which is a private concern), holding an area of 54 acres. The ground being worked consists of fairly rough pebbly quartz, resting on schist rock. Considerable care is taken by brushing and scraping to extract the gold from crevices and inequalities on the bottom. Above the wash is a layer of dark peaty clay overlaid by old tailings from the early diggings, making a total overburden of 9 ft. thick, or thereabouts. Method of work: Hydraulic sluicing and elevating. Eight heads of water are conveyed in races fifteen miles in length in the aggregate, and which tap the N.W. Creek, Shepherd's Creek, and Lammerlaw Creek. A pressure due to a vertical head of 250 ft. is attained, the water being conveyed to the paddock by a main pipe-line 13 in. diameter, with 9 in. branches. Six persons ordinarily employed, and three or four extra men, as required. Returns are said to be satisfactory.

Farrell's Claim, Waipori.—This is what was formerly known as the Deep Lead Company's claim. Present workings are on Mr. Cotton's private land, the owner receiving £10 per acre, and a percentage on gold won. The ground is said to yield from 150 oz. to 200 oz. of gold per acre. The gold is very fine, and, what with the strong pressure of water, the short run of boxes, and absence of side-tables, coupled with the fact that one-third of the material being sluiced and elevated is stiff clay, I am forced to the conclusion that a considerable amount of gold (which might be saved at comparatively little expense) is being regularly lost.

In another part of Otago I found similar conditions existing some time ago, and drew the attention of the management to the need of better appliances for saving fine gold, suggesting longer sluice-boxes and the erection of side-tables. The suggestions were adopted, and the returns from the claim increased beyond expectations.

Golden Key Mine, Waipori.—The system of underground work adopted a year or two ago, with its attendant expenses of winding, pumping, &c., having been found too costly, I understand sluicing has been again adopted, and that a method of working by machinery is under consideration.

Notes on the claims at Post-office Creek (Verter Burn) will be found in the report of Mr. E. R. Green, Inspector of Mines.

Seventy-five men, including twenty Chinese, are returned as the number engaged in alluvial mining on the watershed of the Waipori River. This is independent of dredges, and the total number of persons employed in, and directly dependent on, mining of all kinds on the Waipori watershed is not less than two hundred. Besides this, storekeepers, farmers, saddlers, employés at engineering-works, as well as in many other businesses, are very largely benefited.

The prospective life of Waipori as a field for alluvial mining and dredging I estimate at ten to twelve years, but there are the possibilities of the Deep Lead being properly opened out, and much of the dredged ground being reworked with more efficient machinery. These would naturally add to the life of the district, apart from the future as a centre for quartz-mining.

Wetherstone's.

Golden Rise Claim.—This ground comprises an area of 100 acres. It is worked by hydraulic sluicing and elevating at its upper end, and by a small dredge at the lower end. Nearly one-fourth of the area has been worked by the present holders, whose operations represent the fourth time the ground has been turned over in working for gold, it having been previously worked three times over by hand-labour. The average depth is 9 ft. For hydraulicking purposes five heads of water are brought in from Bungtown and Blackman's Creeks and Malone's watershed. A dam costing £350 has been constructed for water-conservation, and a pressure due to a head of 200 ft. is attained in the paddock. Fourteen men are ordinarily employed, dredge-hands included. As this ground is shallow—and from the fact of its having been worked three times previously cannot be very rich—the holders reasonably claim that the area held should be large in proportion to the number of persons employed, and estimate its working-life at six or seven years.

Golden Crescent Claim, Wetherstone's.—An area of 90 acres, or thereabouts, is held. The ground is suitable for hydraulic sluicing only. It consists of rather rough hilly country, with a layer of drift overlying the cement-wash common to the district. It is proposed to work the upper ground off first, the working of the cement-wash coming in as a second operation. At my visit a race of about fifteen miles in length was approaching completion. This takes eight heads of water from Deep Creek, a tributary of the Waipori River. The company have also the use of an old race belonging to the Golden Rise Company, the latter company having the Crescent Company's surplus water as a *quid pro quo*. The cost of the new race, together with 6,300 ft. of 20 in. pipes (varying from 10 to 14 gauge), is given at £3,500. Sluicing operations were commenced in March with a limited supply of water, and the results obtained are said to be quite satisfactory. A good elevator has been erected. The entire outlay of the company, water-races included, is approximately £5,000.

Pomahaka.

Beyond a little fossicking little or no mining-work has been done during the year. Several claims have been applied for as dredging areas, and a dredge is being built by Messrs. Herbert and Todd. This is nearly completed, and is known as the "Scrubby Flat Dredge."

Beaumont and Island Block.

Champion Gold-mining Company (Limited), Beaumont (Secretary, Mr. R. Pilling, jun., Lawrence; claim-manager, Mr. J. Fahy).—This claim was formerly worked by the Beaumont Local Industry Co-operative Gold-mining Company, which went into liquidation. The purchasers of the property formed themselves into the present company, and are now working continuously, eleven men being employed. Some details of the claim appear in the reports for 1898 and 1899. The improved arrangements for gold-saving (referred to in last year's report) continue to give satisfaction. The gross thickness of material moved is variable. At my last visit the face was from 40 ft. to 50 ft. deep. Of this, 15 ft. to 20 ft. next the surface is a fine silty sand, which does not carry any gold. Below this is a coarse, pebbly gravel-wash, resting on a somewhat uneven bottom of schist rock. It is intended to work a part of the claim by dredging.

Messrs. Eadie and Kirkpatrick are sluicing at Horse-shoe Bend, and there are a few men making wages by digging along the river between Beaumont and Island Block.

The claim and plant at Island Block lately worked by the Island Block Extended Gold-mining Company have been sold to a Dunedin syndicate. I am informed that there is a probability of the ground being worked by electrically driven dredges somewhat on the lines sketched in my report of last year.

Miller's Flat.

The Golden Run Claim, alongside the Clutha River, is being worked by hydraulic sluicing and elevating. A large dredge is being built for the company.

Roxburgh and Teviot.

Roxburgh Amalgamated Mining and Sluicing Company (Limited), Roxburgh (Manager, Mr. J. H. Waigth).—This company's operations consist of sluicing and elevating on a fairly large scale. Total area of claim, 98 acres, of which somewhat less than one-third (approximately) has been

worked. Two elevators were at work at the time of my last visit, and a third was being moved. Mr. Waigth has widened the sluice-boxes at the lower end so as to give a greater spread. He anticipates that this alteration will admit of more fine gold being saved. The returns are said to be keeping up fairly well, and all reasonable care appears to be taken to insure the safety of employés. Twenty-two men are employed. The company have taken up a large area of ground at Lake Onslow, which is being thoroughly prospected with a view to its being worked by electrically driven dredges.

A certain amount of ground-sluicing is carried on by small parties, and the Pleasant Valley Company's claim is worked by hydraulic sluicing and elevating.

Messrs. Stewart Brothers have started a hydraulic plant at Dismal Swamp, but I have not had an opportunity of visiting their claim.

Bald Hill Flat.

The accompanying sectional sketch will convey a very fair idea of the alluvial ground being worked here. It is considered by some that a layer of auriferous-quartz drift underlies the clays and sands below what is now the working-bottom, and in January last a borehole was commenced with a view of proving this. I have not heard anything definite as to the results obtained.

The claims at work are :—

Ewing's, which shows a face of some 12 ft. of drift, overlaid by 4 ft. to 6 ft. of soil, and underlaid by a hard yellow clay. Area of claim, 18 acres; area worked, about 3 acres. This claim has been in operation about two years, and is worked by hydraulic sluicing and elevating. Seven men are employed on two shifts.

Wilkinson's Claim, which employs five men on one shift. Face is about 18 ft. deep, and bottoms partly on schist rock and partly on yellow clay. This is the nearest alluvial working to the base of the mountain-range, and is bounded by bluffs of schist rock, which restrict the working-area. Gold is coarse and easily caught; some very fine samples are got in the crevices of the rocky bottom. Sluicing only; no elevating.

Mitchell Brothers, at which two men are engaged ground-sluicing. The face shows some 18 ft. of drift, overlaid by 6 ft. to 10 ft. of soil. Gold is caught in a paved tail-race. The construction of the tail-race and the manner in which the working-face is kept are, without exception, the neatest I have yet seen.

Carroll and Lynch's Claim, where 14 ft. of drift, overlaid by 4 ft. to 6 ft. of soil, is worked. Bottom is yellow sand. The sluiced stuff is run through a 24 ft. length of boxes (on which most of the gold is caught) laid between the working-face and the elevator, the latter being also provided with the ordinary sluice-box with ripples, &c. Owing to water being rather scarce at my visit only four men were employed.

The *Last Chance Claim*, lately owned by Messrs. Simmons and Hesson, but now by the Last Chance Gold-mining Company, Mr. S. E. Brent, of Dunedin, being secretary. Additional ground has been acquired by the company on the Alexandra side of Speargrass Flat Hotel. Recent work has been at the N.E. side of the old claim, where wash 12 ft. thick, bottoming on yellow clay, has been operated on. Towards the road the clay takes a rise, and the wash tails out, but it is found that another layer of wash of quite a different character takes on. This company have commenced boring operations to test the deeper ground.

The *Bald Hill Flat Freehold Gold-mining Company* is a new venture here. Mr. Kemp's and other properties have been purchased, and I understand it is proposed to work them by dredging, instead of by hydraulic sluicing, &c. A considerable amount of newspaper controversy has emanated in respect to this, and when I was in the locality I heard opinions of a diametrically opposite character advanced.

Matakanui.

The various claims here appear to maintain good average returns, and there seems every prospect of the locality having a good long life as a centre of hydraulic and dredge mining. The latter is a new departure. One dredge, the "Klondike," has commenced work; another, the "Blue Duck," is building. Including Devonshire and Drybread Diggings, there are forty-six men engaged in hydraulic mining, also ten Chinese diggers.

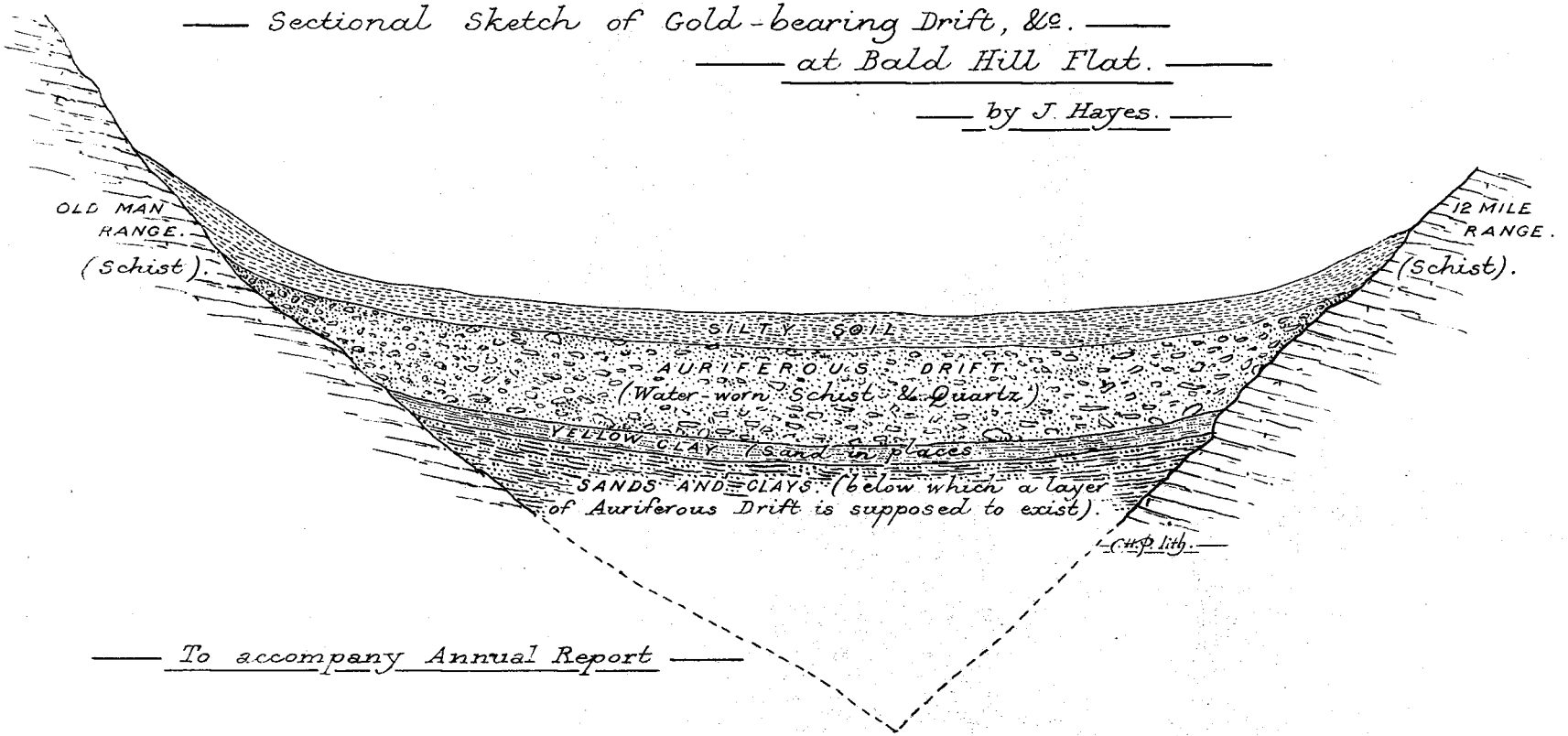
St. Bathan's and Cambrian's.

Scandinavian Claim, Surface Hill.—Since September last a considerable amount of work has been done on this company's claim. In October the elevator was deepened to 60 ft., but only a fortnight's work had been done when a huge slip occurred, which damaged the trestlework and destroyed nearly all of the elevating plant. A temporary elevator was put in, and this enabled all the clay to be removed to a depth of 52 ft. The extra 8 ft. was then sunk with a suction plant, and the trestlework repaired, and a new elevator again put in position. Since then work has been carried on continuously, with (during the greater part of the time) a good supply of water. About 140,000 cubic yards of material have been removed, and a return of 600 oz. is expected in May, when a cleaning-up will take place.

St. Bathan's Water-race Claim.—During the last year the St. Bathan's Water-race, which was purchased by the Scandinavian Company, has been cleaned out and put in thorough repair. It now delivers ten heads of water. An up-to-date elevating plant has been put on the claim which was purchased with the race. The deposit, which consists of quartz-drift, is elevated to a height of 42 ft. and emptied into Muddy Creek Channel by a tail-race 7 chains long, having a fall of $4\frac{1}{2}$ in. in 12 ft. Elevating was commenced on the 18th December, and carried on continuously till the 17th March, when, owing to the dry weather, the elevator was shut down, all the water being required for the Scandinavian elevator. During the time worked 42,000 cubic yards of material were removed, which is anticipated to yield 200 oz. of gold. Considerable difficulty has been

Sectional Sketch of Gold-bearing Drift, &c. at Bald Hill Flat.

by J. Hayes.



To accompany Annual Report

experienced in getting rid of the tailings through Muddy Creek, which has risen quite 4 ft. since January, and a considerable amount of work has had to be done at the upper end to prevent the tail-races from getting choked altogether. A start will be made shortly with the driving of the piles to extend the walling towards the river. This is a subsidised work.

Garty and Gallagher's Claim.—This is a somewhat similar deposit to that which the Scandinavian Company are working, except that, instead of being a solid face of quartz-drift, about 50 ft. of hard clay overlies the quartz-wash, and has to be removed first. The wash varies in thickness from a few inches to over 20 ft. Notwithstanding the height of barren material to be removed with a plant that is quite inadequate, the claim pays handsomely. About 200 oz. of gold were obtained during the last twelve months.

Hunt's Claim.—Mr. Hunt owns the claim adjoining Garty and Gallagher's. He has a water-right of his own from Clear Creek, but it is too low to be of any use for elevating with, and is only used by Mr. Hunt to strip off the surface material and prepare the ground for elevating, which must be done from one of the higher races.

During the spring months there have been about twenty miners working along the banks of Muddy Creek from Mr. Hunt's claim downwards. They all seemed satisfied with the results obtained, and one old miner (Mr. P. Hanahan) has gone to considerable trouble and expense in erecting an elevating plant to test the old bed of the gully about a mile below Mr. Hunt's claim. Indications at present point to his being well repaid for his trouble and expense.

Ewing's Claims.—Work at the several claims of Mr. Ewing—viz., Kildare Hill, Vinegar Hill, Shepherd's Flat, and Cambrian's—has been prosecuted throughout the year much on the same lines as given in previous reports. Mr. Ewing does not appear to spare anything for the efficient working of the several properties.

The claims of the United M. and E. Company and Mr. J. Eagle at St. Bathan's, and that of Messrs. Morgan and Hughes at Shepherd's Flat, have been worked with a reasonable amount of success.

Sludge-channels.—The construction of a subsidised channel from St. Bathan's Township to near the mouth of Dunstan Creek has been continued under the supervision of Mr. J. Eagle, and a start made to open out the Muddy Creek Channel. This latter is under the direction of Mr. Neil Nicholson.

Bannockburn.

About forty men, working in small parties, find employment in the sluicing claims here. Representation having been made to the Government to the effect that the outlet for tailings *viâ* the Bannockburn Creek bed is rapidly filling up, and that, in order to prevent some hundreds of acres of known auriferous ground being locked up, a tailings-tunnel having a discharge into the Kawarau River is necessary, I was instructed to visit Bannockburn and report on the scheme. A survey had previously been made and an estimate of cost obtained. The latter is considered too high, and the diggers interested are of opinion that it could be materially reduced. After careful inspection, and making due allowance for contingencies, my estimate for a tunnel of the required length, 6 ft. high by 5 ft. wide at the bottom, including the necessary works connected therewith, is £11,000. The local people are not prepared to spend this amount, nor any portion of it, but ask that the tunnel should be constructed as a Government work, and a rate levied upon claimholders and owners of water-races who would benefit by its construction. Other details of arrangement (set out in my report on the subject) would have to be made. There is very little question as to the utility of such a tunnel, and on its being driven, and the head-races being put into proper repair (the latter are private property), there appears no reason to limit the working-life of Bannockburn Diggings to less than half a century. Probably not more than fifty diggers could be employed at one time. The amount of head-water available determines the number.

The several parties of alluvial miners working at and around Bannockburn are reported to have done fairly well, taking the year throughout. Three small parties are tunnelling in the wash; the others work by sluicing.

About thirty Chinese miners manage to make a living in the locality. They occasionally get on a good patch, but for the most part are fossicking about old ground.

The Bannockburn Creek, Smith's Creek, and Shepard's Creek are about to be worked by dredges. Material for these are on the ground.

Cromwell and Lowburn.

There have not been any developments in alluvial mining during the year to call for special mention. Several small parties of miners in the locality, including a number of Chinese, appear to be making comfortable livings. Work is carried on by ground-sluicing and driving. There are no large hydraulic plants in the neighbourhood.

Lake Wanaka.

Alluvial mining goes on in a more or less desultory fashion throughout the district. Small hydraulic plants are worked at Matatapu and by White Brothers at Luggate, but the bulk of the work is by driving and ground-sluicing. The approximate number of men engaged in various parts of the district is as under: Matatapu, 12; Luggate, 8; Criffel, 4; Cardrona (including Criffel Face and Branch Creek), 54, including some half-dozen Chinamen: total, 78.

Owing to frost and snow in winter the work is not constant in many instances, and the earnings in the locality of Cardrona is given as not exceeding £1 10s. per man per week on an average for the year.

Arrowtown.

Arrow Falls Gold-mining Company (Legal manager, Mr. R. F. Cuthbertson, Invercargill; claim-manager, Mr. J. Miller).—A detailed description of the method adopted for working the

auriferous drift in the bed of the Arrow River, above the falls, appeared in the report of 1898. The plan of operations there described has been continued in a satisfactory manner. At my visit a lot of dead-work was being done in order to extend the mid-wall and races past a large slip. When this is accomplished there will be a good area of wash in front available for working. The tail-races, which are being brought up on each side the mid-wall as the work proceeds, are fitted with catch-boxes, ripples, &c., for gold-saving. When one side is being cleaned up the stream may be turned down the opposite side.

Arrow Flat Gold-mining Company (Claim-manager, Mr. J. Martin).—This company has its headquarters in Invercargill, and was formed for the purpose of working the flat in the river-bed at Arrowtown. Some years ago an attempt was made to work on the bottom from a shaft and block the ground out, but as the water was too heavy the scheme was abandoned. It is now intended to work the ground by hydraulic elevating. The races are complete, and a start was being made to lay the pipes at my last visit to the district. The following particulars have been recently supplied by the manager: Water is conveyed from Roaring Billy Creek by—(*a*) an open race (measuring 3 ft. wide in bottom, 4 ft. at top by 2 ft. deep) 2 miles 70 chains in length; (*b*) 77½ chains of fluming; and (*c*) four siphons having a total length of 3,505 ft.: total length of water-way, 4½ miles; the average fall being 12 ft. per mile. Penstock is at an elevation of 600 ft. above the claim, and the main pipe-line is carried down the precipitous mountain-sides. At the top the pipes are 24 in. in diameter, diminishing to 18 in. at the claim. The elevator has a 15 in. uptake, and the sluice-boxes (3 ft. in width) are provided with bar- and angle-iron ripples. Actual depth of ground is not yet ascertained.

Macetown.

About twenty-five men, including some half-dozen Chinese, are working in small parties in the locality, and said to be making fairly good wages.

There are several terraces extending from Scanlon's Gully, a short distance above the Macetown Township, down to Bush Creek, near Arrowtown. Nearly all of them were worked on the bottom in the early days by tunnelling, and paid well Some of these are now being sluiced, but the principal difficulty under which the diggers labour is that of insufficient water to get away the top stuff in large quantities. About 100 acres of auriferous terrace ground is unoccupied. It is generally considered that satisfactory returns could be obtained from this area if commanded by a good water-supply.

Maori Point, Skipper's, and Upper Shotover.

The Londonderry Claim (Skipper's Sluicing Company, Limited) and those of Messrs. Johnson and Davis Brothers continue to be worked by hydraulic sluicing. At all these claims the wash is very deep.

Shotover River-bed Claims.—These claims are now being worked almost, if not quite, exclusively by means of Messrs. Smith and Sons' hydraulic jet-pump elevators. A description and sectional drawing, with dimensions, appeared in last year's report, and I am now able to give a photograph of an elevator in position.

Nine claims, employing twenty-nine men, are reported as being worked on the plan adopted by Messrs. Smith and Sons, and from the results obtained it appears quite conclusive that no other plan yet tried has given such good returns. This is further borne out by the fact of the river-bed being recently pegged out for several miles by parties who intend to work the claims by similar plants.

A few Chinese diggers are located in the district.

Waikaia.

At my visit in January the Argyle Company's race had broken away, consequently the men were all engaged in repairing it. The plant at the claim was also in course of removal, the elevator, &c., being re-erected in a fresh paddock. A new elevating plant has also been erected recently at the company's claim at Happy Valley.

At Scrubby Terrace all work has been stopped. It was found that the heavy clay overburden was too hard for the available water to break down, pressure being insufficient. In all probability it might pay a small party of miners to drive in the washdirt and truck it outside for treatment.

A claim has been taken up at Piano Flat, about twelve miles above Waikaia Township, and hydraulic-elevating plant was in course of erection at the date of my visit to the district. A dredge has also been built in the same locality.

Winding Creek Gold-mining Company (Limited). — Claim situated about five miles from Waikaia. The works have been carried on during the last twelve months by means of hydraulic jet elevation. The manager, Mr. David Robertson, has two elevators in position, lifting 45 ft. and 65 ft. respectively, but the principal work has been done at No. 1 face, where about an acre of ground has been stripped and elevated, with a return of about three thousand pounds' worth of gold. The length of races has been increased from twenty-two miles to about twenty-seven miles, the additional length constructed bringing in water from the Kenny-Murray and Winding Creeks. The plant is an excellent one. The main line of pipes vary from 30 in. to 15 in. in diameter, loss of head by friction being thus reduced to a minimum. The paddocks are lighted by electric arc lights of 2,000-candle power, the dynamo being driven by water-power off the main lead of pipes. This property is held principally by the London shareholders, who are represented in New Zealand by Mr. R. Hay, M.I.C.E., of Dunedin.

There are about fifty diggers—half of these being Chinese—in the district.

The Golden Terrace Hydraulic Claim, situate near the Mataura River, between Waikaia and Nokomai, has ceased work for the time being. The results were not satisfactory, the ground being heavy and very large stones having to be dealt with. It is estimated that a small party of working shareholders might make fair wages at this claim.

Upper Waikaia.

The claim of the Upper Waikaia Sluicing Company (Limited) is situated at a high altitude on the upper part of the Waikaia River, and on the Southland side of the Old-man Range. Captain Andrew, of Dunedin, who is largely interested in this property, reports as follows:—

"During the last year most of the work done has been building a large wing dam to turn the river. This has been done after a good many difficulties, chiefly caused by floods owing to the rapid melting of the snow on the ranges, which are close to the property. The elevating plant has been re-erected further up the river than before, and is now in good working-order. Owing to the depth of the bed of the river (about 32 ft.), I find that the best method for future working will be to drive, as, owing to the drainage from the river coming through the loose wash, it compels you to leave a large batter or angle, therefore giving very little floor-space to clean up. Up to the present time we have not come across the heavy run of gold that is believed to be deposited on the bed-rock, but I think it will not be long, as the indications are improving; and, as heavy deposits of gold were got immediately above and below this flat, I fail to see why they should not be got there. In conjunction with this property, I am now getting prices for an electric plant to be erected upon this flat for the purpose of generating power and transmitting it down the Waikaia Valley to supply the dredges (that are about to be built) with motive-power. There is only one dredge at work on the Waikaia—namely, the Nugget—and this one started work last week, and is getting very good gold. From the Nugget dredge right down to the Waikaia Township the whole of the flat is pegged off as dredging claims, and will be all worked in the near future. This electric power will in no way interfere with the working of the claim, as there is a very large supply of water available, and, with a reasonable outlay in enlarging the race, 1,000-horse power could easily be obtained."

Nokomai and Parrawa.

The principal claims here are those of Messrs. Sew Hoy and Kum Poy, which have been amalgamated, and are now worked by the Nokomai Gold-mining Company (Limited), Mr. Kum Poy being secretary. Hydraulic sluicing and elevating are carried out on a fairly extensive scale. The ground being worked is in the valley of the Nokomai River, and is deep and wet. A large proportion of the gold is rough, and easily saved. Some fine gold is carried in the upper part of the wash.

The Parrawa Water-supply and Gold-mining Company (Limited), whose operations were unsuccessful, sold their claim and plant some time ago. From recent advices it does not appear that the present holders have been able to make a success of the property.

A few diggers are to be found scattered over the district, some of whom do fairly well.

Dredging is to be shortly commenced near the confluence of the Nokomai and Mataura Rivers.

Nevis.

In addition to dredging and alluvial mining on a small scale in this locality, there is a hydraulic claim worked by Messrs. W. W. Masters and party, known as "Our Mutual Friend." This claim is situated at Galven's Terrace, at the base of the range of mountains which terminate at the Remarkables and at the west side of the Nevis Valley. The wash is 50 ft. thick, with a trend almost north and south. The gold is got principally in the lowest 8 ft. of wash, which rests on a clay bottom, having a slight dip towards the mountain-range. Pieces up to ½ oz. weight are often met with, the general character of the gold being rough and not much water-worn. A pressure of water due to a head of 300 ft. is used for sluicing and elevating, the wash being treated in sluice-boxes having a fall of ½ in. per foot.

Charlton Creek.

Croydon Gold-mining Company, Croydon, near Gore (N. K. McLean, claim-manager).—The claim is on the ground formerly held by Mr. John Nicholson, and situated near the base of the south-east end of the Hokonui Range. An elevating plant—the first in this part of Southland—has been erected. At my visit the first paddock was being opened out, but the depth of wash could not be fairly estimated. Rights are held for ten heads of water from Whiskey Creek. The head-race is a mile and a half in length, terminating at a dam, which is much too small, only giving storage for eight hours' work per day. A pipe-line some 800 yards in length connects the dam with the paddock; pressure, equal to 400 ft. head. Tail-water is discharged into Charlton Creek, a barrier of stones and scrub being built some distance below the sluice-boxes to retain any solid matter. Five men are employed. Area held, 20 acres Crown land, 130 acres freehold; total, 150 acres. It is intended to work the lower part of the ground by a dredge, and the Charlton Creek is likely to be worked by some half-dozen dredges. One is already at work with satisfactory results.

Round Hill and Colac Bay.

At my visit in August last the Round Hill Gold-mining Company had five elevators in position, but owing to a spell of dry weather only two were at work. Mr. Lee, the manager, appears to take all reasonable care for the safety of his employés, numbering about forty. During the year this company has sluiced and elevated between 8 and 9 acres of ground, or, say, 500,000 cubic yards, obtaining 1,837 oz. 19 dwt. 19 gr. of gold; value, £7,260 1s. 2d. This is practically 3½d. per cubic yard. At the end of March three elevators were at work, and a spare one fitted up in reserve. A second pipe-line (of 27 in. and 18 in. pipes) has been laid to work the upper part of the property. A third line is also under way. The extra water-supply obtained from Granity Creek, together with the storage provided by the large new dam, enables the work to be carried on with greater regularity than formerly, and, now that the expenses of race-cutting and dam-construction are practically finished, the company should, and no doubt will, enjoy the results of their liberal

enterprise. The gold-saving tables erected here continue to give satisfaction in saving very fine gold, and are a source of attraction to mining-men from other countries who are connected with works of a similar nature. A mining engineer from Canada, who has recently been on a tour of inspection through Australia and New Zealand, has pronounced these tables as superior to anything of the sort he has yet seen in any part of the world.

The following is the rainfall at Round Hill from the 1st April, 1899, to the 31st March, 1900: April, 9·04 in.; May, 2·20 in.; June, 2·38 in.; July, 6·15 in., 0·80 in.; August, 2·44 in.; September, 0·95 in., 3·80 in.; October, 5·54 in.; November, 3·50 in.; December, 6·90 in., 0·25 in.; January, 4·10 in.; February, 6·16 in.; March, 6·35 in.: total for twelve months, 60·56 in.

Smith Gold-mining Company (Limited), Round Hill (Secretary, L. W. Petchell, Riverton).—This is a locally formed company, the capital being £1,500 in £1 shares, and the claim is situated immediately below the forks of the Ourawera Stream. Operations were commenced in October, 1898, to clear a pipe-line and form a dam, the latter having a capacity of 130,000 cubic feet. This is necessary owing to the somewhat limited water-supply at times; and by the storage effected the claim may be worked eight hours daily out of the twenty-four (or one shift per day) in ordinary dry weather. The dam is situated at an elevation of 180 ft. above the claim, and the plant comprises 55 chains of 13 in. diameter main pipe-line, and several chains of 9 in. and 7 in. service-pipes to nozzle and elevator. All the plant was designed by and erected under the superintendence of Mr. George Lee, manager of the Round Hill Company's works, and includes one of Mr. Lee's patent elevators. The saving-tables are practically identical in principle with those in use by the Round Hill Company, and I understand the entire plant gives every satisfaction. From information supplied to me this claim appears to be paying handsomely. Since my visit the company were unfortunate in sustaining serious loss by two floods, but since these occurred the elevator has been removed further from the creek and the plant re-erected in a better position. Notwithstanding these drawbacks, the gold won has, I understand, more than cleared all costs, and the claim is in a fair way for earning good dividends. Five men are employed.

The *Ourawera Gold-mining Company* have laid a second pipe-line, and have been running two elevators for several months when sufficient water has been available. They are now, I understand, about to make important additions to their water-service, and concentrate their operations on one elevator, which should give better results than two elevators working with an insufficient water-supply. The ground being worked is increasing in thickness of overburden, hence results per cubic yard have somewhat decreased; still, the earnings of the claim are said to be very satisfactory on the whole. Twelve men employed.

Oraki Gold-mining Company (Limited).—This company is composed of local shareholders, who have been somewhat unfortunate owing to a small available water-supply and inadequate storage-dam, also to the ground not turning out so well as was expected. The claim has therefore been let on tribute. Recent advices state that the tributers are only making bare wages. The claim, situated behind the Township of Colac, is worked by hydraulic sluicing and elevating.

There are a few small parties working in the locality, also several Chinese diggers, whose number appears to be gradually diminishing.

Considerable interest is being taken locally in the question of dredging, a company having been floated to work an area at Lake George. The pontoons are already built, and machinery is being erected. The Ourawera Creek Dredging Company is also on the market, the intention being to work the flats at and above the mouth of the Whakapatu Sludge-channel. If these ventures are successful, there is very little doubt of the extension of the dredging interest in the locality, as several claims are taken up, and the success or otherwise of the first dredge will be an important factor in determining the further development of this class of mining in the neighbourhood.

Orepuki.

Undaunted Gold-mining Company.—This company's works are the most extensive on the field, and comprise—(*a*) A claim adjoining that of Forbes Brothers, which is worked from an adit; and (*b*) two small sluicing claims near the bush. In the former the ground is wet and fairly heavy, necessitating good timbering. This latter has been well attended to by Mr. Corbett, who has charge of the works, and is a man with considerable experience of underground working. Ventilation, and a means of outlet in case of emergency, are provided for by means of a small shaft 56 ft. deep. This shaft is also used for lowering timber. Instead of trucking the washdirt outside, it is emptied into a sluice-box near the shaft. This sluice-box is laid along the adit and continued outside. Ripples and matting are provided for catching the gold. Head-water is conveyed down the shaft in pipes. The payable wash averages 2 ft. thick. The sluicing claims worked by the company have been acquired from the Chinamen, who were supplied with water from McLean's race. This has also been purchased by the company, and is about thirteen miles in length, taking its water from Deep Creek and the Waimeamea Creek. One of these claims is said to be rich, and good returns are looked for; the other one may not yield much more gold than will pay expenses. Eighteen men employed by the company.

The claims of Forbes Brothers, Wilson and party, and some others are worked partly by sluicing and partly by driving, while Pearson's, Hobb's, and McLoughlin and Manning's claims are all underground work; most of the other claims in the district continuing to be worked by ground-sluicing.

Owing to the limited amount of clean head-water available on the one hand, and the thickness of clay overlying the wash on the other hand, there is a growing tendency to adopt underground mining, bringing out as little barren stuff as possible.

Unfortunately, the men of the district appear to know very little, as a rule, as to how timber should be set to secure ground. In several instances I found it necessary to bring men out of their drives to point out the defective timbering from the mouths of the drives inwards. It would

pay these miners to combine in parties, each party employing a competent man to attend to the timbering of, say, two or three adjacent claims. In one instance (in addition to the Undaunted Company's mine) I noticed, with pleasure, that the timbering was very well done. A fatal accident, by which two young men were killed through neglecting to properly secure their working-place, will doubtless lead to more care in the future among men working underground.

The gold at Orepuki, like that at Round Hill, is very fine, and, owing to the very primitive and, I think, inefficient methods adopted generally for catching it, a very considerable portion must be lost. Where ground-sluicing is the method adopted at the claims the force and volume of water are too small to allow of the complete disintegration of clay and dirt. In consequence it is unlikely that all the gold is liberated, and the clay lumps and thick clayey water must carry away some gold in their flow down the tail-races at the claims, and into the main outlet channel or tail-race. This latter channel is washed up periodically, and is said to yield good returns, but I cannot for a single moment think that anything like the whole of the gold which escapes from the claims is caught there. This view is confirmed by the fact that men working on the sea-beach, near the discharge of the channel, are making very fair wages. Why the parties of miners who own this main tail-race are not more alive to their own interests appears very surprising.

I am of opinion that the several parties who hold interests in the tailings-channel might mutually arrange for the construction of an elevator with sluice-boxes and tables similar to those in use at Round Hill, which are admittedly among the most perfect appliances of their kind in use on any known alluvial goldfield in the world. Taking the channel at 4 ft. deep, and allowing 2 ft. of drop into channel at end of boxes, an elevator-lift of 14 ft. at the outside would allow of a long run of boxes with side-tables of large area, and this height would not require a greater pressure of water than is available. Such an arrangement would, in my opinion, pay well. The plant, once in position, would not need moving and re-erecting as in ordinary hydraulic claims, but be permanent, and could be attended to by one man, with a little assistance occasionally.

Waiau Beach.—The hydraulic claim here does not appear to have been a success. Operations are suspended.

West Waiau.—A small number of miners are engaged here, mostly ground-sluicing. Fairly good results are said to be obtained.

There are still several Chinese diggers scattered about Orepuki and district; their number appears to be gradually decreasing.

Preservation Inlet.

Sealer's Creek.—A water-race 90 chains in length, taking its water from Sealer's Creek, has been constructed, and at end of March the pipe-line was being laid. It is intended to work an area of ground here by hydraulicking. As the work is fairly well forward, mining operations are expected to commence early in May. Mr. F. McKenzie is in charge. Twelve men employed.

Four men at Gulche's Head (the Neck), four on Coal Island, and two at Digger's Creek practically comprise the remnant of the numerous small parties who were attracted to the district by the glowing reports of some six or seven years ago. So far as I can learn, they are only making a bare living.

Remarks on other claims in the southern district will be found in the report of Mr. E. R. Green, Inspector of Mines.

Accidents.

The quartz-mines of the district have been entirely free from accidents of a serious nature during the year, only one or two accidents of a minor character having been reported.

The following accidents occurred at, or at works in connection with, alluvial mines and diggings:—

18th April, 1899.—John Patterson and Alexander Beatson were accidentally killed by a fall of earth in Patterson and party's claim at West Waiau.

29th April, 1899.—Ly Gee Yup, a Chinese miner, sixty-two years old, was found under a fall of earth in his claim at Waikaia. The man had been missing for a week, and was dead when found.

22nd June, 1899.—John Clarke, employed in the construction of a water-race from Deep Creek (a tributary of the Waipori River) for the Golden Crescent Sluicing Company (Limited), Wetherstone's, Lawrence, lost both eyes owing to the explosion of a charge of dynamite which had evidently been left in a drill-hole some months previous, and of which Clarke was not cognisant. The work at this place had been standing for some time. It is thought that Clarke, who was clearing away the ground loosened by shots fired the day previous, had with his pick struck a primed charge which had been inadvertently left when the work was formerly in progress, and that the drill-hole had been obscured. Personal inspection satisfied me that there was no carelessness on the part of Clarke or the man in charge at the time of the accident.

15th July, 1899.—Sin Sing, a Chinese miner at Macrae's, working his claim single-handed, was accidentally killed by a fall of earth.

1st August, 1899.—John and Alexander Pearson were accidentally killed by a fall of roof in their claim at Orepuki. The accident was owing to neglect on the part of deceased to set timber at the working-face. There was an abundance of timber quite handy.

3rd August, 1899.—Michael Hickey, a raceman employed by the Golden Key Company at Waipori, was accidentally killed by a fall of rock on the company's water-race. Deceased, with the manager, was engaged in some repairs to the race, and whilst waiting for some material for which deceased had sent his son a piece of rock fell without warning. It was considered that the fall of rock was occasioned as the result of recent heavy frosts, followed by a rapid thaw.

15th August, 1899.—Kong Lip (fifty-six years of age), a Chinese miner, was killed by an explosion of dynamite in his claim at Moke Creek. Deceased was alone at the time of the accident, and there was no evidence at the Coroner's inquest to show how the explosion occurred.

6th October, 1899.—Frank McDonald, engaged at the Hibernia Claim, Sutton Tanks, near Middlemarch, was accidentally killed by a fall of earth.

20th February, 1900.—John Johnson, a young man employed with his father at Mount Criffel, was accidentally killed by a fall of rock whilst engaged in cutting a water-race.

Accidents in connection with dredge-mining are as follows:—

13th May, 1899.—Robert McKay, employed on the Balclutha Company's dredge, Tuapeka Flat, was drowned off the dredge. At the Coroner's inquest the dredge-master admitted that the provisions for safety on dredges had not been complied with, and he was subsequently charged with this offence in the Magistrate's Court, and fined.

21st July, 1899.—A man named Smith, employed on the Earnscleugh dredge, near Alexandra, was drowned. He and another man were in one of the boats, and it appears the boat took a sheer and began to fill, whereon deceased jumped out and soon sank. A boat was put out from the dredge, but deceased was not seen again after sinking.

6th September, 1899.—Daniel McLeod, a partner on a small dredge at Tuapeka mouth, was killed by a blow on the head by a winch-handle, the fastening of which had slipped or worked loose.

9th September, 1899.—Daniel Carline, engine-driver on the Waipori Consolidated Company's dredge, got his foot crushed.

GOLD-DREDGING.

This branch of gold-mining operations continues to advance, and during the past year a very large number of claims have been offered to and taken up by the public. The keen interest so apparent a year ago does not seem to diminish in any way; if anything, the contrary is the case. This is perhaps accounted for partly by the fact that during the past few years it has been clearly demonstrated that under certain conditions auriferous ground which for various reasons cannot be profitably worked by other means can be made to pay when handled by a well-designed dredge, and also that the bulk of the dredges at work have paid handsomely, while a few, notably the Hartley and Riley, which is in the Clutha River a little below Cromwell, Otago, have yielded phenomenal returns, and riches have been rapidly acquired by the fortunate shareholders.

It is also to be remembered that, unlike the conditions which appertain to underground work, dredge-mining is not saddled with heavy fixed charges which have to be met when work is suspended, the capital required is comparatively small, labour conditions are not onerous, the working-expenses are practically a known quantity and do not vary very greatly, and, in the event of a claim not turning out satisfactorily after a fair trial, the dredge is a saleable asset; whereas shafts and tunnels, upon which large sums of money may have been spent, can hardly be regarded as such. These are conditions which also tend to make investments in dredge-mining popular, and, judging by the results obtained (in the southern district, at least) during the last few years, such investments have proved very safe and remunerative as a whole.

The intense interest which is now being taken in dredge-mining is not confined to one part of the colony. In North Otago the Awamoko and Maerewhenua Rivers have received some attention, and dredges are about to be placed on them. The Kakanui River is also pegged out for some miles. At a visit made by me to the Awamoko River in November last I saw prospects of fine gold got very close to the surface of the wash, and obtained fine colours of gold from practically surface-gravel at the mouth of the Kakanui when last in the district. The Clutha River (misnamed the "Molyneux" for a portion of its length) is largely taken up for dredging from, say, Tuapeka mouth to Cromwell; above this there are several claims between Cromwell and Lakes Hawea and Wanaka, and also in the valley of the Cardrona. The Kawarau River is also taken up from its confluence with the Clutha at Cromwell to practically its source at the foot of Lake Wakatipu; the Shotover River gives promise of the early addition of more dredging plants, and it is proposed to work the Dart River, at the head of the lake, by dredges. Bannockburn Creek and its tributaries are also to be the scene of dredging operations. Increased activity is being displayed on the Manuherikia River and its watershed by the erection of the Olrig and Springvale dredges in the river, and the Klondike and Blue Duck dredges at Matakanui. In addition to the several plants now at work on the tributaries and watershed of the Taieri River, a small dredge (removed from Lawrence) is being erected at the foot of the Waipori Gorge, above the Township of Berwick, and new dredges are building for the Upper Kyeburn.

In Southland new dredges have been started, and others are in course of construction, on the Waikaka Stream, Charlton Creek, Waimumu Creek, and the Mataura River. A dredge has been built on the Waikaia River, near Piano Flat; another is building at Dome Creek, Waikaia, also at Lake George, near Colac Bay. At Bellmount, on the Waiau River, a suction dredge has been started, but so far, I understand, its operations have not been financially successful. This dredge contains a lot of the machinery formerly used on a suction dredge at Waipapa. When it was proposed to erect a machine on this principle on the Waiau there were serious doubts expressed as to its being a success, owing to suction dredges tried at Waipapa and on the West Coast in former years not having proved satisfactory. However, the promoters were sanguine, and preferred to have their own way.

Since writing the foregoing, information has reached me to the effect that, as the suction dredge referred to has been found totally unsuitable for its work, it is to be converted at once into a bucket dredge, the prospects obtained fully warranting the alteration. It is confidently asserted that the Waiau, if worked by powerful dredges, will become one of the most lucrative rivers in the colony.

Prospecting is also in hand at various places on the Waimea Plains. It is stated that the results are encouraging. This being so, the watershed of the Mataura River is likely to become a very important centre of operations.

In the West Coast mining district attention is being given to dredging areas in Marlborough, also on the Karamea, Mokihinui, Waimangaroa, Orowaiti, Buller, Grey, Teremakau, Hokitika, and Totara Rivers and adjacent flats, Ross Flat, and other places. For several of these new dredges are in course of construction, and the machinery of one dredge in Otago has been bought for removal to the West Coast.

That a number of claims have been put on the market in consequence of the feverish excitement which has taken hold of a portion of the community goes without saying. How far several of them are justifiable has yet to be proved, and in this, as in other branches of mining, the unexpected often happens. When the Hartley and Riley Dredging Company was put on the market some difficulty was experienced in getting shares taken up, but the phenomenal returns which this medium-sized dredge has obtained—amounting very recently to 1,187 oz., valued at £3 15s. per ounce (=£4,451 5s.), for a single week's work—has caused quite a rush for shares in claims in the same locality. A success of this sort, coupled with the fact that very good returns have been obtained from other dredges, has been taken advantage of by many who simply take up shares for the sake of trafficking in them, and shares have changed hands at large premiums where the dredge is not yet built, nor likely to be for several months to come. This may be smart business, but it cannot be considered as legitimate mining investment, as such premiums cannot be said to be honestly warranted until a dredge has got to work and proved the capabilities of the claim.

Claims have been pegged out in some few instances—presumably for the sole benefit of promoters—where dredging is practically out of the question. It does not necessarily follow that, because dredging has developed a method of alluvial mining which has been successful in places where other methods would be commercial failures, this process is applicable everywhere. There are conditions where hydraulic mining, or even tunnelling, would be more suitable than dredging. This has been demonstrated near Naseby, Otago, where hydraulic elevating had to be reverted to. One or two properties have been put on the market and floated as dredging concerns where, if I am not mistaken, the conditions are far more favourable for hydraulic sluicing and elevating. But dredging has taken such a hold on the public in some parts of the colony that no other form of mining will be considered as an investment. This condition is no doubt responsible for the large number of "dredging" claims, good, bad, and indifferent, which have been put before the public during the past few months.

References have been made in the reports of the last two or three years to the successful working of dredging plants on flats to which a sufficiency of water can be brought for floating the machine and treating the material lifted. Very large areas of this class of ground are now being worked, and will be worked in the future. There need be very little fear of results in most cases if the precaution is taken of having the ground properly tested by a series of small shafts sunk at various points, and the material treated by a cradle or sluice-box prior to placing a dredge on the claim. By this necessary preliminary much valuable information may be obtained as to the nature of the ground to be worked, and the average yield which may reasonably be looked for. From the information so gained a suitable dredge may be designed. This is a very important feature, and one to which insufficient attention has been paid until within the last year or two.

Where flats and river-banks carrying a clayey overburden above the wash are worked by dredges it is found that lumps of clay, and water carrying clayey matter in suspension, are responsible for the loss of gold to a very appreciable extent, although some few dredge-masters are very loth to admit what is clearly the case. Others have admitted that they believe their worked ground would pay to dredge again for the gold lost in the first working, provided that thoroughly up-to-date plants, designed for the efficient saving of gold, were adopted. That there is some reason to think this is so is evidenced by the fact that in a few instances dredges are now working at a profit on ground which had previously been worked three times over by hand-labour—the last time by Chinese diggers. I only know of one case where a dredge-master has actually taken the trouble to systematically ascertain his loss from the cause referred to. In this case it was found as the result of treating measured quantities of tailings that gold amounting to 2 gr. per cubic yard of tailings treated was lost. This may be taken as a fair index of what is going on where the auriferous wash is overlaid by a heavy subsoil and clay.

The dredge at which this test was made is a small one with a capacity of about 1 cubic yard per minute. Allowing the dredge to actually raise one-half its theoretical capacity, or 30 yards per hour for twenty working-hours daily, a loss of 2 gr. per yard amounts to 15 oz. per week. Even if the loss is only 1 gr. per yard, it is enough to cover the working-expenses of the dredge in question, the gross yield of which is about 20 oz. weekly on a working-cost of 7 oz. Taking the average profit of this dredge at, say, 10 oz. per week, at £3 15s. per ounce—£37 10s.—by forty-four weeks per year (thus allowing ample time for holidays, repairs, &c.), we get an annual profit of £1,650 on a capital expenditure of some £2,500. This, after allowing for depreciation, gives a return of fully 50 per cent. on the capital invested, and, as has been shown, could be very materially increased if some satisfactory method were adopted for preventing the loss of gold.

The most natural way to overcome the difficulty appears to be the adoption of a system of first stripping the overburden from off the wash. This would allow the latter to be more efficiently treated in the screen, sluice-boxes, or tables. It is purely a question of doing it in the least expensive method so far as the prevention of gold loss is concerned, and in many instances might be effected by dredges taking a preliminary cut level with the bottom of the clay. No doubt some alterations in the ladder and bucket-chain would in certain instances be necessary, but as it is possible to make the former telescopic, and the lengthening of the latter is a comparatively small matter, there need be no great difficulty (with future dredges especially) in stripping a reasonable distance ahead of the face of wash, with a consequent reduction in the amount of gold lost. It may be urged that the adjustments which this plan would necessitate would take up time. This is true, but the results would in the great majority of cases fully justify the means. Other methods

may suggest themselves to designers of dredges, such as an independent set of buckets working on the overburden only, and stripping simultaneously with the ordinary work of the dredge, or of a small independent plant specially designed for the purpose.

Viewed from the standpoint of gold-saving alone, the matter deserves far more attention than has yet been bestowed upon it; but there is another aspect of the question—viz., that of the permanent effects upon land in consequence of dredging operations—which warrants very serious consideration. It is now known that, in addition to the swampy lands where dredging is being successfully prosecuted in parts of Southland, payable auriferous gravels underlie really good agricultural land in that district, considerable areas of which have been put under offer to dredging companies at prices far above agricultural value. Taking into consideration the fact that, whereas the dredging of this land will only yield one crop of gold, it would be capable under ordinary conditions of yielding farm crops year after year indefinitely if left undredged, it forces the question, Can the gold be taken out of the ground without the agricultural value being greatly depreciated? The answer to this may be in the affirmative, provided that the soil and clay are first stripped off the wash and deposited on the tailings. Going still further, I venture to affirm that ground now comparatively valueless from an agricultural standpoint on account of its swampy nature may be made to yield its crop of gold in the first instance, and be improved into land of a higher value for agricultural purposes by the very act of dredging if the overburden is stripped in advance, and deposited behind the dredge. The reason for this is not far to seek: Land is often swampy owing to the tight nature of the subsoil and strata below it. By dredging, the gravel-wash would be broken up and loosened, and, as ground which has been broken up from a tight, consolidated state requires a greater space than when *in situ*, it naturally follows that to put this ground back into the same superficial area its depth or thickness must be greater, hence the result is that the surface becomes somewhat raised. The looseness of the gravel deposited offers conditions of better filtration, thus drainage is more easily effected. The earthy and clayey matters are broken up by the action of stripping, and further disintegrated and intermixed by deposition on the dredge's tailings. Thus, with the concurrent action of atmospheric influences, the ground is raised, drained, sweetened, and generally improved. A dressing of lime following these operations would in many instances—in the Southland District, at least—result in the production of fairly good farm land.

During the last two or three years there has been a decided move in the direction of very large dredges having a capacity for lifting an enormous amount of material. Where ground is deep a large dredge is a necessity; but I cannot entirely agree with the greatly increased lifting-capacity in many instances, for the simple reason that (in my opinion, at least) the area of tables for saving gold, and more particularly the arrangements for saving fine gold, have not received the additions and amount of attention which the treatment of an increased amount of material appears to demand. There is very little doubt but that this is a part of dredging operations which will bear considerable improvement. The question should not altogether be How much can the dredge lift? but How much can the dredge successfully treat? A dredge which is lifting 100 tons per hour, and only capable of efficiently treating 60 tons in the same time, cannot be said to be doing its work satisfactorily. Where a dredge is working on a flat which has been turned over two or three times, clay, soil, and wash are so mixed up that the loss of some fine gold is practically impossible, but there does not appear any legitimate reason why more than a very minute percentage should be lost where dredges are working on clean wash, free from clay, as in the Clutha (or, as it is often erroneously called, the "Molyneux") River and some of its tributaries.

The necessity for dredges being designed to suit the class of ground to be operated on becomes more apparent every year. In the Clutha River the wash is, generally speaking, of a loose character, and readily falls to the buckets. This admits of the inclination of the bucket-ladder being much steeper than where the wash is compact, and has to be torn out. It has been urged that for conditions of the latter nature the buckets, when on the bottom, should be well ahead of the pontoons, and that in at least one instance an otherwise well-designed dredge failed to attain success from this very cause alone. It is probable that the explosion of a few well-placed charges of dynamite would (when this plan is feasible) afford considerable assistance to dredges working in tight ground. On banks and flats there would be no difficulty in this.

At the time of writing all the working-dredges are, with the exception of one current-wheeler, driven by steam-power, the only electrically driven dredge, which was at work on the Upper Shotover, being under course of re-erection at Miller's Flat, near Roxburgh. Dredges to be driven by electrical power are in course of construction at Earnscleugh Flat, and at Fourteen-mile Beach, near Alexandra. Electricity will be generated by dynamos driven by water-pressure. A suggestion has been made to utilise the water of the Roaring Meg for generating electricity as a power for working the dredges now being built on the Kawarau River. Where water-power is available, and coal expensive, electricity will no doubt play an important part in future dredging operations; the wonder is that this question has not received far more attention in the past.

The inconvenience and expense to which steam-driven dredges are subjected could in many instances be considerably minimised by the adoption of electrical power, and the space now taken up by boiler and coal would be available for the erection of more extensive arrangements for gold-saving. The question of comparative costs would, I think, result in favour of electrical power at places remote from a cheap coal-supply, even if the electric current had to be generated by steam-power at or near a coal-mine. Cartage, wear-and-tear of bags (the latter averaging fully 1s. 3d. per ton of coal used on dredges), and loss of time in getting coal on board are items of considerable expense.

There is also another and most important point. Dredging has now become an industry which will last for a large number of years in various parts of the colony. It is also expanding. The question of a reliable coal-supply for power purposes in the future is one which dredging companies ought to take into serious consideration.

The coal supplies for a very large proportion of working-dredges are drawn from small pits, worked in a very hand-to-mouth fashion. To any one experienced in the economics of coal-mining it is painfully apparent that these small pits are not worked to anything like the best advantage, and that considerable quantities of coal have been, and under existing conditions are likely to be, irrecoverably lost. This cannot be otherwise where coal-mining is on such a small scale, and owners of pits are forced, by very shortsighted competition, to accept prices which will barely more than pay working-expenses at the mine, their profits having to come out of cartage. It is impossible, under such conditions as these, to open out and work coal-mines properly. The multiplication of coal-mines (underground mining is being considered) means the multiplication of fixed charges; and this is a point which very few people appear to grasp. If a reliable and economical supply of fuel is to be depended on in years to come, the coal areas must be worked more comprehensively and systematically, and on a scale which will admit of the seams being worked to the very best advantage and with a minimum loss of coal. This would allow of the erection of central electric-power stations at the coal-mines. With modern high-pressure boilers fitted for forced draught, inferior coal (now unsaleable) could be used up, and triple-expansion condensing-engines used for driving dynamos. Thus maximum results would be obtained at a minimum expense, and the power so generated might be distributed for several miles in every direction, coal bagging and carting, with their attendant expenses, being entirely dispensed with. In the southern district Coal Creek (near Roxburgh), Alexandra, Cromwell (or Bannockburn), Waikaka, Waikaia, and Gore are places which readily present themselves to the mind as suitable for enterprises of the kind suggested.

At the 31st March the number of dredges is returned as follows:—

——	Working.	Standing.	Undergoing Removal.	Altering.	Building.	Total.
Southern district ...	81	3	12	1	101	198
West Coast district ...	4	3	...	...	58	65
Total	85	6	12	1	159	263

Four accidents, attended with fatal results, occurred during the year at dredges working in the southern district.

The special rules (which were framed some time ago) in the interests of safety for employés are, on the whole, fairly well observed, although here and there men are to be found who, either through stupidity, ignorance, or conceit in their own cleverness, or a combination of two or more of these qualifications, ridicule the necessity of safety provisions. However, the greatly decreased number of accidents in proportion to the number of persons employed which have been reported since these special rules were established amply justifies the action taken by the department. It has been found in many instances that when boat-hooks and life-buoys are lost, and light-lines used up for odd jobs, they are not promptly renewed. This being a breach of Special Rule 3, dredge-masters should note that it is an offence which Inspectors are not likely to pass over. At a recent inspection by Mr. Green, Inspector of Mines, it was found that many dredges which were well provided with safety appliances a year ago are now very deficient in that respect. Notices have been served on the managers requiring them to promptly comply with regulations. In cases of failure it is the intention of the department to institute legal proceedings.

Prosecutions were instituted during the year against two dredge-managers in the Lawrence district for neglecting to provide proper safety appliances, and convictions obtained on all charges.

A new dredge was built at Ophir two years ago. Its operations not proving successful, it is being removed to Charlton Creek, Southland. The Mountaineer dredge (Crookston and party) being too small for the Clutha Gorge, below Cromwell, has been moved to near Mataura. Several others have been or are being removed.

Full returns of dredges working, standing, undergoing removal, and building in the southern district are given in the report of Mr. E. R. Green, Inspector of Mines.

In Dunedin the several engineering-works are running night and day in consequence of the large demand for dredge material. Orders are also being filled by engineering firms in Invercargill, Christchurch, Wellington, and Greymouth, whilst a considerable amount of machinery (apart from engines and boilers) is being imported from Melbourne and Great Britain.

Descriptions of Dredges.

Messrs. Morgan and Cable, of Port Chalmers, have designed and built a type of dredge for working alluvial flats and shallow rivers which is much simpler in its general arrangements than many of the large river-dredges. A general drawing of this is given.

Mr. F. W. Payne, consulting engineer, of Dunedin, has favoured me with a drawing of a dredge which is to work on Fraser Flat, near Alexandra, and also gives the following description of this very large plant:—

This is the largest dredge yet under construction for working any claim in the colony. The hull is 119 ft. long, 35 ft. 6 in. wide at bow, and 50 ft. wide at stern. Depth of hull forward, 6 ft. 6 in.; depth aft, 9 ft. 6 in. The approximate amount of timber to be used in the hull is 130,000 ft. The engine is a 25 nominal horse-power compound surface-condensing. The boiler has been specially designed to combine large heating-surface and grate-area, and is of the multitubular externally fired type, with a working-pressure of 150 lb. per square inch. The ladder is of sufficient length to dredge 40 ft. below water-line. The buckets are of 7-cubic-feet capacity, and are speeded to run ten buckets per minute. The winches for lifting the ladder and for shifting the dredge are of specially

heavy design, and consist of six barrels or drums, one for the head-line, one for ladder-line, and four for side-lines, and are driven by a pair of vertical engines. The screen is 31 ft. long, 4 ft. 6 in. in diameter, driven by friction of flat rollers. The material is delivered into the screen in the usual way, and from there the coarse material is directed into main elevator-buckets; the finer portions that pass through the screen are delivered on to the gold-saving tables, the tailings from which are deposited into a settling-tank, from which they are lifted by means of a supplementary elevator into the main elevator, this method being rendered necessary by the presence of a large amount of fine material which, if not thus disposed of, would seriously impede the working of the dredge by banking up under the stern. The main elevator is the principal feature of this dredge, being 145 ft. between centres of top and bottom tumblers, and is capable of stacking tailings to a height of 80 ft. above water-line. The elevator is driven by means of two wire ropes—one each side.

The Golden Run dredge, which has been designed by Mr. Edward Roberts, consulting engineer, of Dunedin, is also another very large machine, and is illustrated from drawings kindly supplied. It is to work in the Clutha River, near Miller's Flat. Mr. Roberts describes this dredge as follows:—

The dredge illustrated is now being built to work the company's claim in the River Molyneux, at the upper end of the Island Block Flat. The claim embraces a considerable portion of the flat, into which rich leads of gold have been traced by the small dredge formerly working on the claim. The dredge worked a portion of the river claim, and got a large quantity of gold of the value of £13,971 in four years, but the dredge was too small to tackle the high banks or to work the river to any advantage. The company therefore decided to have a large dredge built which would be capable of working the whole of the river portion of the claim, and also the high banks, which vary from 15 ft. to 30 ft. above river-level. Several new features have been introduced into the design with a view to increased handiness, amongst which may be specially mentioned a patent ladder extension. In this extension arrangement the ladder pivot-bearings are supported by inclined guides or girders, on which they slide by means of screw-gear. Should it be desired to dredge a little deeper than ordinary the pivot-bearings can be made to slide down the inclined planes towards the deck, and extra buckets and links put in. An extra roller is provided, the bearings of which can be bolted to the inclined guides, which then form a standing portion of ladder. An extra depth of from 8 ft. to 10 ft. may be reached by this extension. Other ideas have been also adopted which have been used on other dredges built by the same designer, and have proved efficient—namely, the large A frames first introduced into the Golden Beach dredge, the elevator with the curved buckets, the mode of supporting the elevator first introduced in the Golden Point dredge. The elevator is pivoted on strong cast-iron brackets or frames, which also carry all the gearing, making a rigid job. The elevator is hung in two places from the head of a pair of tubular shear-legs pivoted in line with the elevator. Sheave-blocks are attached to the head of the shear-legs, and other sheave-blocks to the head of the A frames, two sets of blocks being used. Wire tackle is rove through the blocks, and the falls led to two handy winches affixed to the A frames. The height of the elevator can be adjusted with facility without ever stopping the dredge. The designer has recognised the importance of providing against the sagging which takes place athwartship in dredges caused by the great weight of the machinery being chiefly along the centre-line of the dredge. The A frames before mentioned are instrumental in checking this tendency, being well braced transversely by diagonal bracing. Further provision has also been made astern to counteract the weight of the elevator by a frame built across the vessel fitted with heavy diagonal stay-rods. Longitudinal stiffeners and the tendency to hog is prevented by a system of hog-posts combined with the A frames and front gantry and stay-rods forming a truss. The engine and boiler are on the port side of the dredge, and the winch with the main friction-gear on the starboard side. The two men in charge are therefore able to attend to their respective employments without continually crossing the well; this idea was first introduced by the designer in the Golden Gate dredge. The winch is a very handy one. The motive-power is supplied by a pair of inverted vertical engines driving through double gear the main pinion-shaft situated in the centre of the winch. From this main pinion-shaft the motion is transmitted to the head-line and ladder-line barrels by separate clutch-pinions. These clutch-pinions have break-sheaves attached and strap-breaks, and the breaks being on the pinions instead of being on the winch-barrels permit of much better control, it being possible to lower the ladder with safety by the break. Another advantage is that when the breaks are on and the clutches out of gear the spur-wheels and pinions are stopped when the other barrels of the winch are in use. The bucket-ladder is very heavy, and fitted with large rollers. The buckets are each of 6½-cubic-feet capacity. The revolving screen is 6 ft. diameter, and delivers into a distributing-box having adjustable slots in the bottom to deliver the material fairly on the divide of the tables and to regulate the discharge. The screen is driven by friction-rollers from the lower end. The gold-saving tables are arranged as usual in separate strakes. The engine is a 25-horse-power nominal compound engine (Marshall's). The surface-condenser is horizontal, with 4 in. tubes, the water being drawn through the condenser from the side by a 12 in. Tangye pump, which delivers the water for the tables into the tank at the head of screen, from which it is led to the screen and tables. The boiler is of 40-horse power nominal, internally fired. The elevator is specially light in the frame, and is fitted with elevator-buckets having Roberts's patent cast-steel ends. Tube-stays are provided to counteract the side-movement, and the outer end has a pivoted discharge-shoot capable of adjustment in either direction. The hull is built with blue-gum frames and kauri planking 2½ in. thick. The general dimensions are as follows: Length of hull, 110 ft.; breadth astern, 36 ft.; breadth at bow, 30 ft.; depth astern, 8 ft. 9 in.; depth abaft of tumbler-frame, 6 ft.; width of well, 6 ft.; length of main ladder, 75 ft.; length of elevator, 97 ft.; weight of elevator, 20 tons; capacity of main buckets, 6½ cubic feet; capacity with buckets three-parts full, 172 cubic yards per hour; depth dredged at 45 degrees, 45 ft. below water-line; height to which tailings may be stacked, 48 ft. above water-line.

The Priestman Dredge.

It has often occurred to me that, with a modification of the well-known Priestman grab, this style of dredge might be advantageously used for working in places where boulders, buried timber, and other obstructions have to be encountered. Also that a pontoon with a small crane and Priestman grab might be used for prospecting in rivers where it is impossible to prospect by shaft-sinking. In a case of this kind the material raised could be emptied into boats, and treated in a sluice-box on the river-bank, in order to minimise the size, weight, and expense of a purely prospecting plant, in which, as a matter of course, portability is an important consideration. My fear was that, with the grab as ordinarily constructed for harbour-dredging and similar work, gold would escape during the act of lifting the loaded grab from the bottom to the hopper or other receptacle into which the gravel is deposited prior to treatment. Learning that Messrs. Priestman Brothers (Limited), of Hull, England, had given some attention to the adaptability of their machines for gold-dredging, I communicated with their Australasian representative, Mr. J. W. Jaffray, engineer, of Sydney, pointing out the views expressed above. I cannot do better than quote from Mr. Jaffray's reply, in which he says,—

"*Escape of Gold.*—At the outset, I am glad of the opportunity to refer to your remarks under this head. It is one that is being used very freely against the Priestman grab-dredger here by those who are interested in the manufacture of the ladder dredge, and, indeed, it is the only forcible argument that seems to strike them to use against its adoption. Of course, there might be some reason in what they say if a grab were used of similar construction to what is used in dredging the generality of muddy rivers.* But you will notice from the particulars forwarded that the grab recommended for gold-dredging is constructed so as to close up entirely, the short tines (which are constructed at the mouth of the grabs) being so arranged that in the closing of the grab they fit one into the other, and thus make practically a solid bottom, so that really nothing can escape. But, in addition to this arrangement, it must be borne in mind also that this grab is lowered down to the bed in a perfectly extended (or open) position, and before it commences to rise at all the action of the chains serves to close the grab up. Thus, in the act of closing, it at the same time compresses the material hard together, leaving no chance for any gold to escape. I think the mere mention of this fact will be sufficient to show the unreasonableness of the objections raised against us on this score."

Mr. Jaffray has kindly forwarded drawings showing the general arrangements of a Priestman dredge adapted for gold-mining purposes. These are reproduced.

Unlike the ordinary ladder-and-bucket dredge, which raises the material in buckets holding comparatively small quantities—about twelve buckets per minute being emptied into the sluice-box or screen—the Priestman dredger lifts from 1 to 2 tons at a time, the process being intermittent, as contrasted with the constant steady delivery of buckets. Any objection which might be raised to the delivery to the screen or sluice-box of so large a quantity of material at one time is met by the adoption of a receiving-hopper, at the bottom of which an oscillating grating or grizzly is fitted. Reference to the drawings will show that two revolving screens are provided. The action of the oscillating grating subjects the dredged material to a rough screening, and so separates large stones (which would otherwise pass through the revolving screens) from the material to be treated by the gold-saving arrangements. These large stones are carried away from the dredge by inclined shoots projecting some distance over each side. The material to be treated falls through the oscillating grizzly on to shoots, which direct it in a regulated stream into the revolving screens. From this point the treatment is identical with that of the modern ladder-and-bucket dredge.

It is well known to those who have had any experience of the Priestman dredge in connection with harbour-works and undertakings of a like character that large boulders, heavy pieces of blasted rocks, and tree-trunks or stumps can be removed without much difficulty by means of this machine. Where a dredge of this kind is used for gold-dredging a barge could be kept alongside, into which boulders and other obstructions could be deposited by the grab. Other conditions being favourable, there appears every reason to think that the Priestman dredge will be found of great value in working auriferous rivers and flats where obstructions such as those above referred to exist, but how it will answer in tight ground remains to be proved. It is claimed that the wear-and-tear on a Priestman dredge is less than that with the bucket dredge. Judging from a quotation for the machinery for a dredge having a lifting-capacity of 70 tons per hour, I do not think the initial cost would be more than for a well-built dredge of the bucket type having a similar capacity, and the labour requirements would be practically the same.

From the drawing it will be noticed that the dredge can be made to propel itself by a screw propeller. This can be fitted at either end to suit requirements, and might answer very well on flats. For swift-flowing rivers such as the Clutha, Kawarau, Buller, Grey, and others in this colony the winch arrangement as generally adopted on bucket dredges is a necessity.

GOLD-DREDGING: CONDITIONS WHICH IT IS NECESSARY FOR A DREDGE TO FULFIL IN ORDER TO OPERATE SUCCESSFULLY.

Mr. R. H. Postlethwaite, formerly of the New Zealand Engineering and Electrical Company, Dunedin, New Zealand (a firm having a lengthy experience in dredge-building), and now of San Francisco, U.S.A., has contributed the following paper to *Mines and Minerals*:—

Gold-dredging has been, until quite recently, considered by experienced miners either as an occupation for a crank or as a method adopted by the needy promoter for the extracting of money from his wealthy but weaker and more unenlightened neighbour. Now, however, in consequence of the invention and introduction of suitable and adequate machinery, as represented by the most modern type of gold-dredge, all this is changed, and the industry of securing the gold from the alluvial deposits scattered throughout California and other States of the Union is coming into

* Dredging for navigation purposes is meant in this connection.—J. HAYES.

greater prominence, and is engaging the attention not only of the speculator, but also of the conservative man of business, who, under existing circumstances, has difficulty in obtaining suitable and safe investments through the ordinary and recognised channels of investment for his capital. The prejudice which the industry has had to meet and overcome in order for it to gain a footing as a recognised and accepted branch of mining, a prejudice caused entirely by the inherent defects and consequent failures of the earlier types of dredges, and the fact that such prejudice has actually been overcome, as evidenced by the interest now taken in the industry, proves to demonstration that the modern dredge is a complete and unequivocal success.

In considering and discussing the dredging industry it will be but necessary to criticize and comment on the three recognised types of dredges built and in use at the present day—namely, the hydraulic-suction dredge, the shovel dredge, and the continuous-bucket ladder dredge. Of these types the first named is gradually becoming, and may be now looked upon as, a back number so far as dredging for gold is concerned. For digging sand and very small gravel the suction dredge is admirably adapted, but for lifting boulders or even large stones, an essential attribute of the successful gold-dredge, the suction dredge is comparatively useless; for when designed to lift boulders or large stones a tremendous and disproportionate loss in efficiency occurs. The shovel dredge will also, in the course of a few years, in all probability be an unknown quantity in the mining world. In this type of dredge there are many points of inferiority when compared with the continuous-bucket type, but there are, unfortunately for itself, no corresponding points of superiority. The dredge which most nearly fulfils or approaches to the following conditions is the dredge which must of necessity be the best adapted to gold-dredging: (1.) Speed and readiness in moving and taking up different positions: this qualification is especially necessary in a dredge when the ground to be worked contains very heavy boulders, too large for the dredge to lift, or submerged trunks of trees, for in such cases it becomes imperative to change the point of attack and so dig that the boulder may be released from its surroundings, and may roll back into the hole previously prepared for it. Again, it is at all times a great advantage, particularly when working into a bank and stacking tailings at a great height, to be able to move at will the stern of the dredge without at the same time being compelled to change the position of the bow. (2.) Adaptability for cleaning the bed-rock. (3.) The possibility of digging to a maximum depth: this qualification is particularly valuable when the ground to be worked is of great depth and the values near the bed-rock. (4.) The feasibility of working a high bank and taking charge of the tailings. (5.) Cheapness in working: this is absolutely essential where a low-grade property is being operated. (6.) A close gold-saving apparatus or device.

By comparing to a common standard the two types of dredges above referred to, an intelligible and fair criticism of their respective merits may be made, and a sound judgment arrived at. The shovel dredge, of necessity, must be operated by means of spuds, and cannot, therefore, with any degree of celerity, be made to move from one position to another, nor can the bow or stern be readily shifted without moving the entire dredge. The continuous-bucket type of dredge, a full description of which is given below, being operated by means of lines, can be easily and rapidly made to take up any position desired. The cleaning of the bed-rock, it will be readily seen, particularly when uneven and composed of a hard material, is much more easily effected by the comparatively small buckets of the continuous-bucket machine than by the wide-mouthed shovel of the other type of dredge under discussion. The principle of construction of the shovel dredge *ipso facto* renders that type suitable only for digging in comparatively shallow ground, whereas the continuous-bucket type can operate with full efficiency to a depth of 60 ft. The latter type of dredge can and is operating inland, working into banks from 10 ft. to 16 ft. above water-level, and is, without difficulty, taking charge of and stacking the tailings behind it to a height of from 24 ft. to 30 ft. There is no case on record where a dredge of the shovel type has operated under similar conditions; it may therefore be presumed that the dredge, as at present designed and constructed at all events, is not suitable for that class of work. The crew necessary to operate a shovel dredge is from two to three times that required to operate the most modern pattern of the continuous-bucket dredge, and the power required to operate the former is nearly twice that necessary for the latter. The power in the case of the shovel dredge is required intermittently, consequently a much more severe strain is thrown upon the entire dredge than in the case of the bucket dredge, where the power used is constant and the strain is comparatively steady. The cost of working a shovel dredge runs from 7 cents per cubic yard upwards, whereas the most approved pattern of bucket dredge can be operated at a cost of from 3 cents to 5 cents per cubic yard, which latter estimate includes $100 per week to depreciation account, though the actual depreciation, experience teaches, does not amount to half that sum. In order to make a close saving of the gold, a steady, continuous, and not too heavy feed is necessary; the quantity of material fed to the machine must be regulated by the size or area of the gold-saving tables or apparatus, in such manner that not more than a thin stream of gravel shall be washed over the tables at any one time. This is possible when the material is dumped continuously and in comparatively small quantities, as in the bucket dredge, but is not possible in the case of a shovel dredge when a cubic yard and a half of gravel is dumped into the hopper at one time, for, up to date, no satisfactory automatic hopper has been devised to feed uniformly to the tables such a large quantity of material. Another serious objection to the shovel dredge is the difficulty of keeping the door of the shovel sufficiently tight to prevent a leakage of the small gravel and black sand, which, of course, carries the gold.

There are numerous patterns of the continuous-bucket and ladder dredge; some of these are, however, extremely inefficient for gold-saving purposes, because they do not grade the material before running it over the tables or through the sluices, as the case may be. It is a well-recognised fact amongst miners that very fine gold cannot be saved in sluices constructed for heavy material. Again, other dredges partly grade the material, but not to a sufficient

extent. Some of the bucket dredges are fitted with a perforated flat screen with a vibratory motion for the grading of the material, whilst others employ a perforated revolving cylinder or grizzly. Experience shows that the revolving cylinder disintegrates and washes the material more effectively and with less wear-and-tear to the machinery than the flat screen. In 1896 a San Francisco firm constructed a dredge modelled on the lines above suggested. This dredge apparently overcame many of the difficulties previously experienced in gold-dredging in this country, and reduced the cost of working from 10 cents to 15 cents per cubic yard to 3 cents and 5 cents, according to conditions. This dredge operated so successfully that there are now thirteen in actual operation, and two more are in course of construction. They are distributed throughout the various States of the Union as follows: Seven in California, one in Oregon, one in Idaho, three in Colorado, and one in Alaska. This dredge, being a very modern and admittedly a very close gold-saver and a very economical operator, will bear a more or less technical description. The dredges vary somewhat in details to suit them to the various local conditions. The hull is constructed of heavy timbers, 80 ft. long by 30 ft. wide and 6 ft. deep. The ladder, built up as a heavy lattice girder, is hung at the stern end by means of a bar fixed across a heavy wooden framing. On the lower end of the ladder is a five-sided tumbler, the ladder itself being suspended by a system of blocks and tackle to a cross-beam. A wire rope attached to the bottom end of the ladder runs through the blocks to the winch, hereafter described, and enables the ladder to be raised or lowered at will, according as may be necessary to suit the conditions and depth of the ground in which the dredge may be operating. The top tumbler is carried by the tumbler-framing some 3 ft. above the top end of the ladder, and is driven through a rope transmission and heavy gears by a vertical compound condensing-engine, which also operates the pump. A friction-clutch is placed on the countershaft, which slips, and thus prevents breakage in the event of any obstruction being encountered. The continuous-bucket chain comes up the top side of the ladder on rollers round the top tumbler and back in a catenary curve to the lower tumbler. The buckets, varying in capacity from 3¼ cubic feet to 7 cubic feet, according to the size of the dredge, are built of steel plate, and are riveted on to steel links bushed with manganese steel, of which last-mentioned material the pins are also made. The buckets are connected by means of the links, and are thus formed into a continuous belt of great weight, and capable of standing very hard usage. The buckets, at the rate of fifteen per minute, dump on to a delivery-plate, from which the material passes by gravity into a revolving screen or grizzly. This screen, which is perforated, the size of the holes depending entirely upon the class of gold to be saved, is set on an incline, so that the material, whilst revolving, gradually passes through, and is thoroughly washed and disintegrated during the process by means of a heavy stream of water under pressure from a perforated pipe running the whole longth of the screen. The gold and all fines pass through the perforations into a distributing-box, the coarse material being conveyed by gravity into an elevator or stacker, also of the continuous-bucket type, but close connected, and thence dumped at the required height above the surface of the water. From the distributing-box the gold and fines pass through a number of adjustable doors in a thin and constant stream on to the various sections of the gold-saving tables. The tables are made of cast-iron, and are covered with cocoa-matting and expanded metal, and are so arranged that any one section can be cut out and washed up without interfering with the operation of the dredge. The excellence of this gold-saving device is evidenced by the fact that nearly all the gold is caught near the head of the table, which is 8 ft. long, and has an area of 200 square feet. The sand and waste fines pass over the tables into a sluice fitted with angle-iron riffles, and thence overboard astern of the dredge. The sluice is really a conveyor for the waste fines, and not a gold-saver, as the tables practically catch all the gold. Steam is supplied by a horizontal return tubular boiler consuming 2¾ cords of wood per day in the case of the 3¼-bucket dredge, and slightly more in the case of the larger dredges. The crew necessary to operate this dredge consists of two men on each shift — a winchman and an engineer. The winchman has complete control of the dredge by means of the winch, which has six independent barrels: four of these barrels control lines running from the four corners of the dredge; the fifth carries the head-line, the resiliency of which greatly relieves the digging-buckets of much unnecessary strain, and enables bed-rock to be more easily cleaned than when a "spud" or "sett" is used. By means of these five lines, all of which are fastened to dead-men on shore, the dredge can rapidly be made to take up any position. The sixth drum carries the ladder-line, and enables the ladder to be raised or lowered at will. With this pattern of dredge almost any alluvial deposit can be worked, provided there is a sufficient quantity of water on the ground to float the dredge, or provided a sufficient quantity can be brought to the land for that purpose.

In consequence of the low cost of operating, and of the fact that inland ground can be worked where the water-level is or where it can be artificially raised to within 18 ft. or 20 ft. of the surface of the soil, thousands of acres of auriferous gravels in running rivers, old channels, and ancient deposits, many hundreds of feet above the present river-channels, averaging 10 cents to 25 cents per cubic yard, have become suddenly valuable, and will yield handsome returns when operated by means of the modern dredge.

Gold-saving on Dredges.

The following paper has been contributed by Mr. J. P. Smith, M.A.Inst.M.E., of Dunedin, a gentleman who has given a considerable amount of thought to the subject of gold-saving in connection with the dredging industry:—

The quantity of gold saved in proportion to that lifted by a dredge is dependent upon several factors, which may be classified as follows: (1) The nature of the drift in which the gold occurs; (2) the nature of the gold; (3) the efficiency of the gold-saving appliances in use; and (4) the experience of the men employed. In this paper it is not proposed to deal with the latter factor in more than a cursory manner, as the number of dredges equipped during the past few years has made it impossible to man them with experienced men.

(1.) *The Nature of the Drift in which the Gold occurs.*

The auriferous drifts of Otago now worked with dredges may be divided into five classes, each possessing distinctive features of their own. They are: (*a*) The banks and channels of rivers traversing gravel-filled valleys; (*b*) the beds of rivers running through rock-bound gorges; (*c*) valley deposits; (*d*) filled-in lake-beds; and (*e*) marine littoral deposits.

The (*a*) section is the most important. It includes the Clutha where its course is through the Moa, Dunstan, Earnscleugh, and other flats; the Kawarau near Arrowtown and Cromwell; the Upper Clutha above Cromwell; the Manuherikia, the Mararoa, and other rivers. In the channels there is a constant concentration and reassortment of all detrital matter brought into the river by its tributaries, and by the erosion of its banks. Where the flats are wide there is often evidence to show the river has not always run in the same channel. Dredging is carried on under the most favourable conditions in this class of country, the tendency of the dredge-designers being to constantly increase the lifting-power both as regards depth and capacity of the machines, and to look for profitable returns from the quantity of material treated rather than from the close extraction of the gold.

(*b.*) *The Beds of Rivers running through Rock-bound Gorges.*—These gorges occur where the rivers have cut into the schistose rocks which form the surface of the greater part of Northern Otago. Some examples are the bed of the Kawarau from Victoria Bridge to the Gorge Township; the Clutha from Cromwell to Clyde, and again from Alexandra to Coal Creek. The conditions generally are unfavourable for dredging. Where the direction of the gorge is at right angles to the strike of the schists the bed of the stream is comparatively free from heavy rocks, but where it corresponds to the strike, and the dip of the rock is at a high angle one of the walls becomes what is locally known as a slip-sideling, the surface-rocks sliding upon their bedding-planes from the higher to the lower levels, and depositing masses of rock in the channel. The rapid flow of water through these gorges has a tendency to disintegrate the rock-bottom so quickly that what is known as a soft-schist bottom, formed by the decomposition of the rocks *in situ*, rarely occurs. Apart from the hard nature of the bottom, the dip of the mica-schists in some of the gorges is at a considerable angle from the horizontal: in some parts of the Kawarau Gorge it is 40°, and in the Dunstan Gorge from 25° to 28°.* Like all other natural agents, water attacks the line of least resistance. In these rocks it is the mica and clay between the quartz foliations which yield first to erosion, thus forming corrugations. Where the quartz plates are thin the lip of a dredge-bucket will break them down, and may reach some of the gold in the hollows; but where the quartz occurs in lenticular masses the gold, so far as bucket-dredging is concerned, is safe for all time.

(*c.*) *Valley Deposits.*—In this paper this term is used with reference to those deposits formed by the breaking-down of the auriferous-quartz drifts, cements, and conglomerates, and their redeposition in shallow depressions. The original formation may have entirely disappeared, leaving only the reassorted gravels in the valley-bottoms. The creeks traversing these valleys are usually small, the work of denudation and distribution having taken place at a period when the rainfall was greater than now. The Waikaka, Charlton, and Waimumu flats are examples of this class of ground. Occasionally bands of clay are found interbedded with the gravels, and sometimes, if in the vicinity of volcanic rocks, the wash is more or less cemented with the iron set free by the decomposition of the basic lavas. When sufficient water is available these deposits can be dredged without difficulty: the gold is distributed throughout the wash. A variety of bottom is met with—pipeclay, lignite—and frequently where the enclosing elevations are gravel-hills the deposited wash rests upon the undisturbed gravels.

(*d.*) *Filled-in Lake-beds.*—Auriferous deposits consisting of angular rock fragments are found forming the surface of what at one time were lakes and mountain-tarns. If the lake were a large one, the gravels are only auriferous near the old margins, and then only in the vicinity of the outlets of streams draining gold-bearing country. In ground of this decription the dredging-bottom, representing the old lake-bottom, consists of clay and fine sand, originally carried in suspension into and deposited from still water. The wash is very little water-worn, and always derived from the schists of the neighbourhood. The broken rock has evidently been swept into the lake by sudden floods in the adjacent creeks, caused by the temporary damming of the creek by slides, and the subsequent bursting of the dam. The gold was carried with the rock, and is evenly scattered through the wash, the bottom layers being little richer than the top. In most instances these deposits form excellent dredging areas. The Upper Ida Valley and Speargrass Flat are examples of this class of ground.

(*e.*) *Littoral Deposits*—The sea-beaches of Otago have never been successfully dredged. Hitherto attempts have been made with dredges constructed on the suction principle to deal with the sands, but, as the problem is one of concentration and subsequent extraction only, they have so far failed. These auriferous beaches occur in many parts of Otago; the most extensive are between the Clutha mouth and Waipapa Point. This portion of the coast is within an area of elevation. Upon some of the beaches the sand extends some distance inland, and is covered with bush. The gold is associated with layers of magnetic and titaniferous ironsand interstratified with siliceous beach-sand. The highest layer where I examined the deposits is 4 ft. above high-water mark in the ridge of sand-dunes that faced the ocean, but inland they occur 8 ft. above the same level. The layers of black sand continue with more or less regularity to a proved vertical depth of 15 ft. below high-water level, and will probably be found to live down to greater depths. There must be many square miles of these deposits, and in the near future their exploitation by dredging will be undertaken in earnest. The richness of the deposits is undoubted.

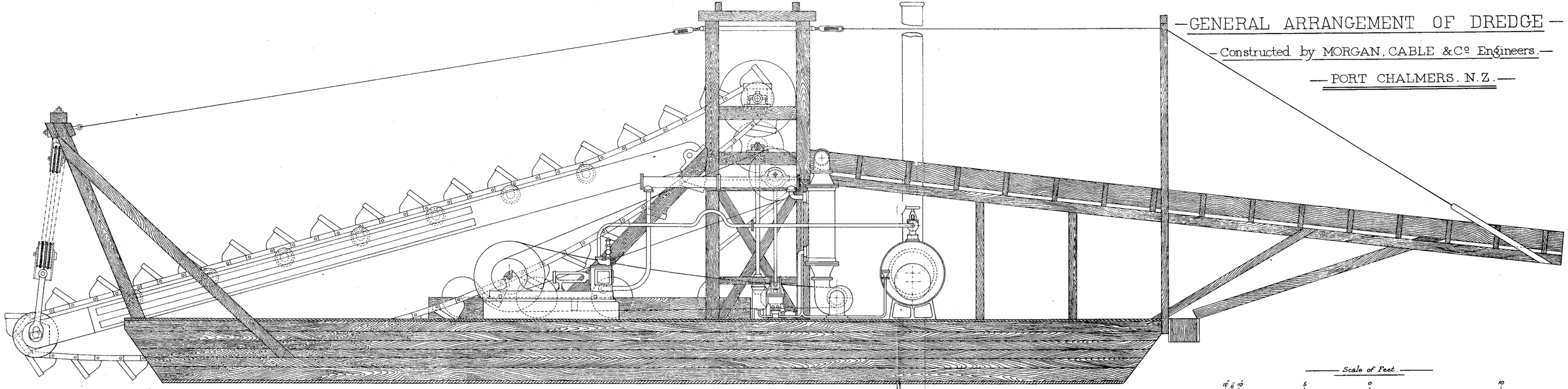
The watershed of the Clutha (upper and lower), with its tributaries, is, down to the Beaumont, almost entirely included in the Wanaka and Kakanui geological formations. The rocks of these formations consist of mica, chlorite, hornblende, and argillaceous schists. It would be natural to expect that the gravels forming the river-drift of this system would be composed almost exclusively

* Hutton and Ulrich.

—GENERAL ARRANGEMENT OF DREDGE—

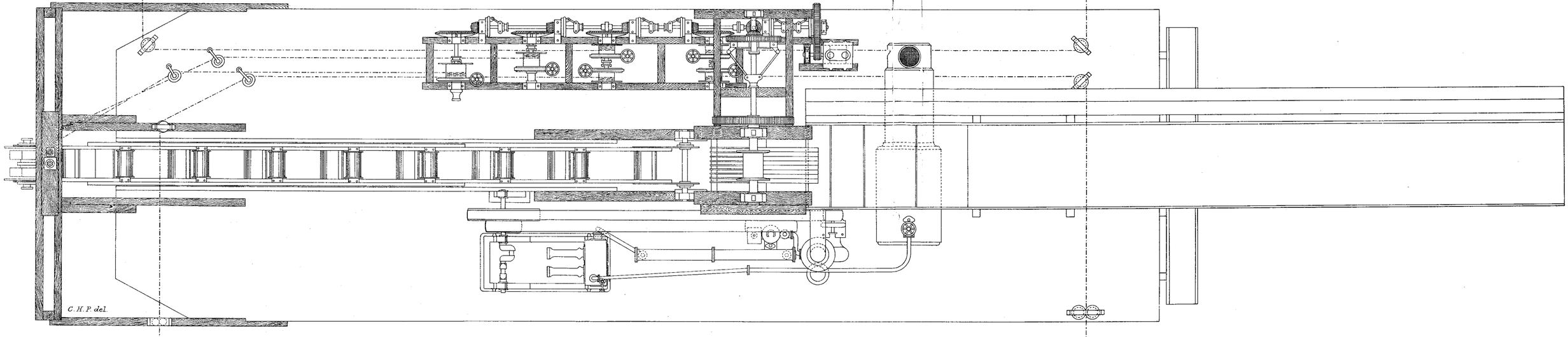
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—PORT CHALMERS. N.Z.—



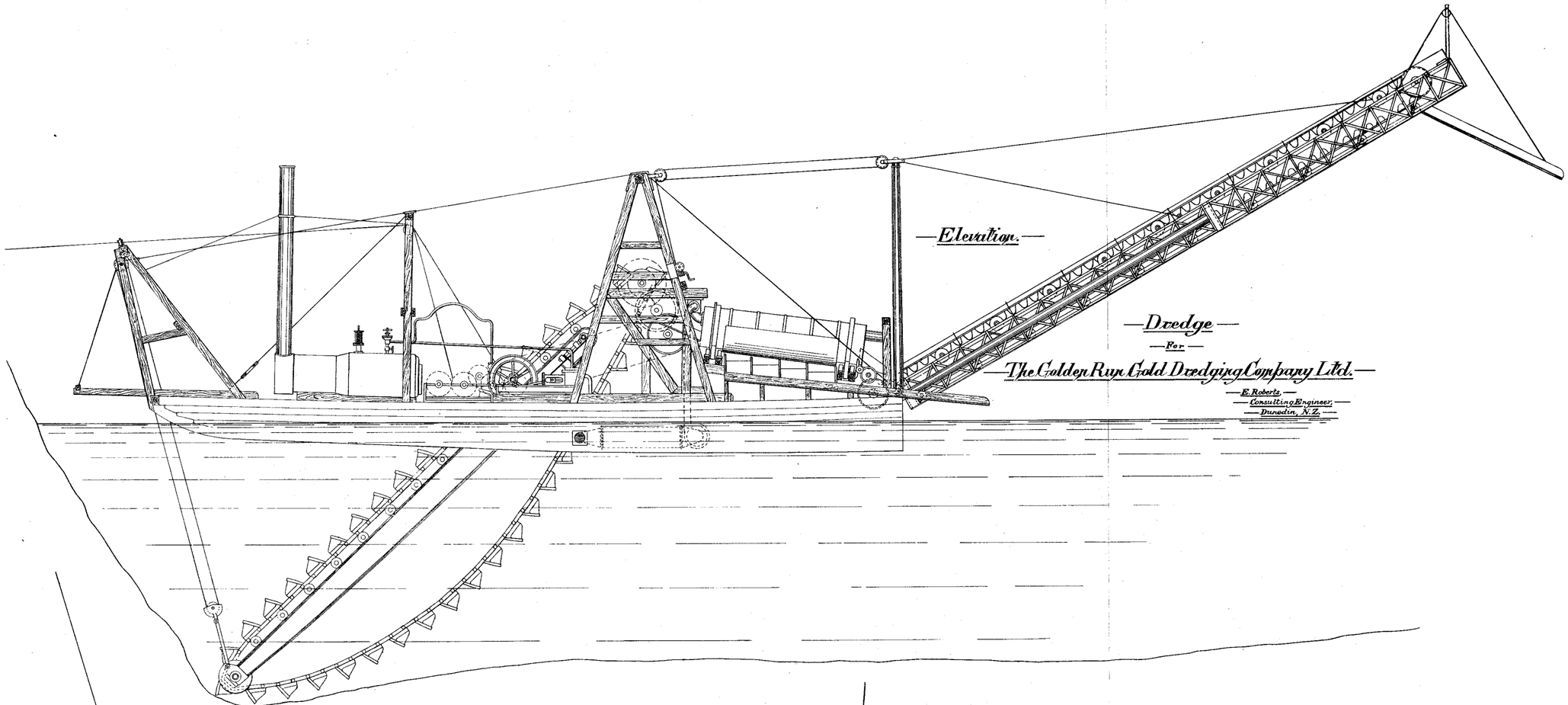
Scale of Feet.

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C.H.P. del.





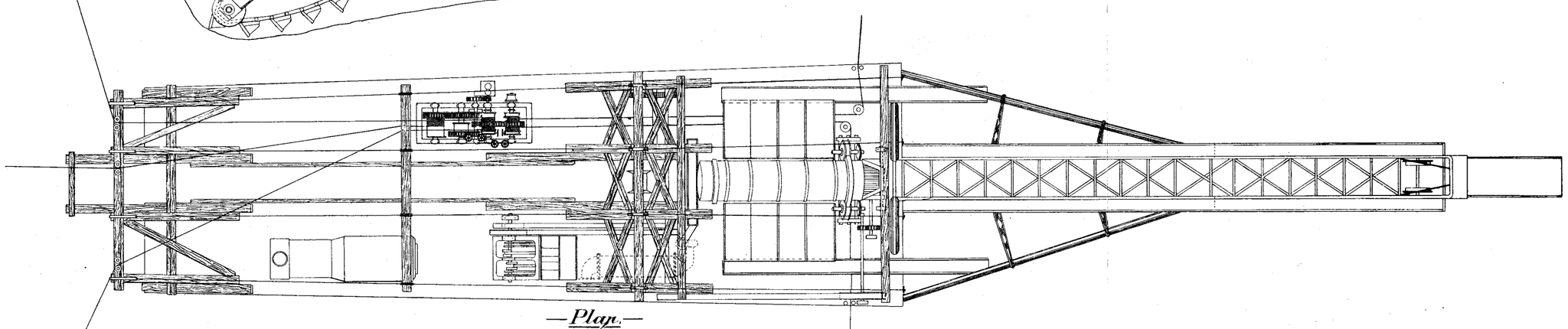
—Elevation.—

—Dredge—

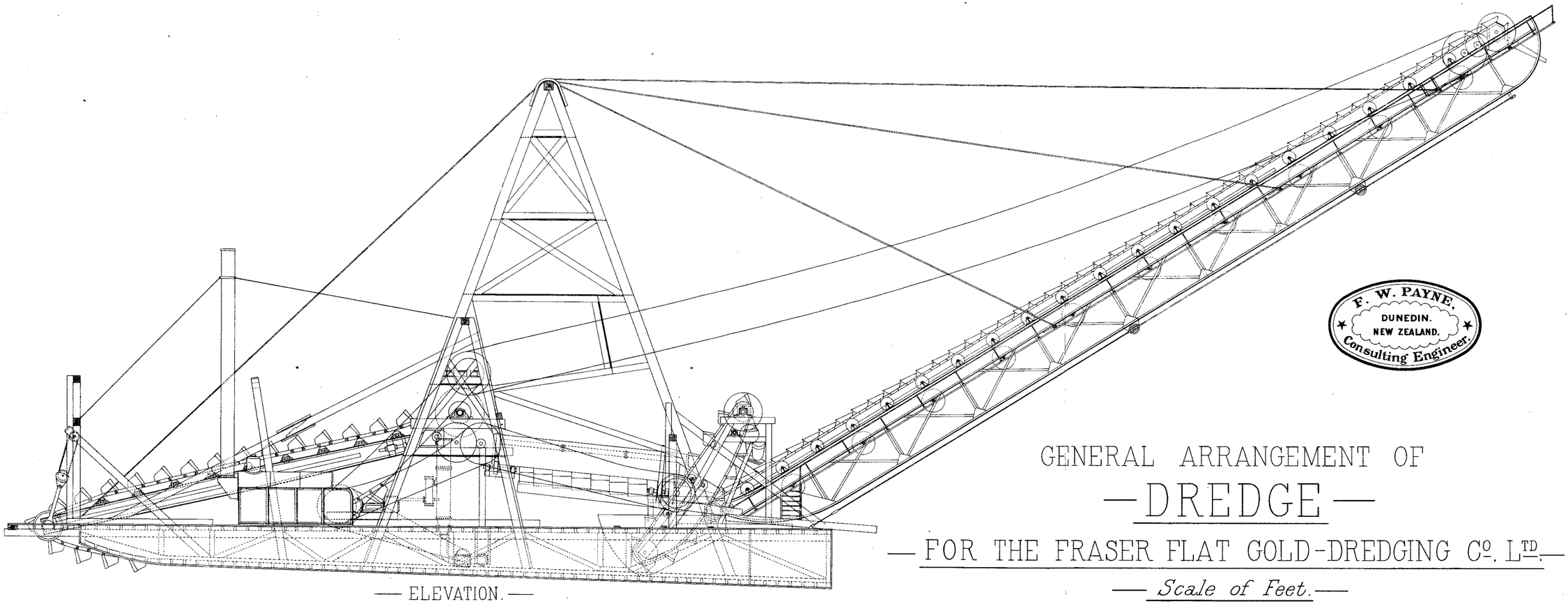
—For—

—The Golden Run Gold Dredging Company Ltd.—

—E. Roberts,—
—Consulting Engineer,—
—Dunedin, N.Z.—



—Plan.—



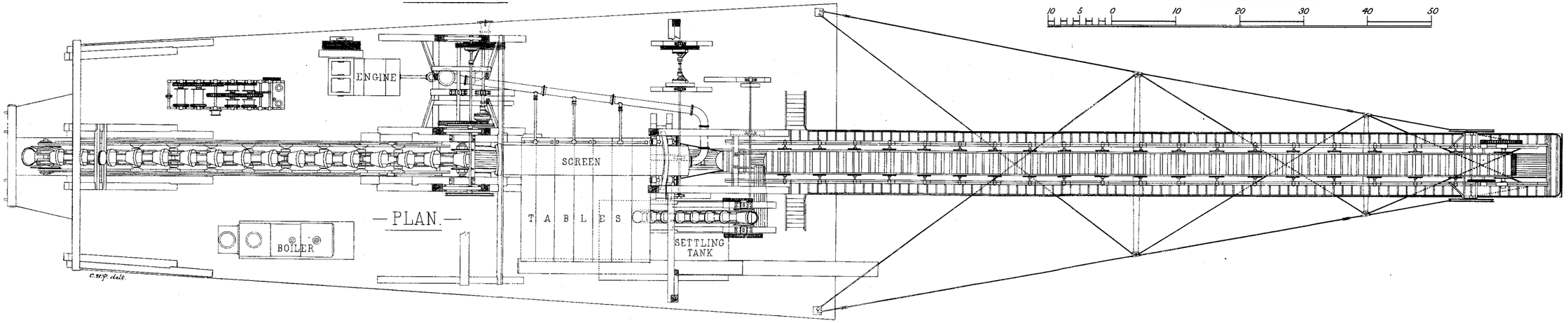
F. W. PAYNE,
DUNEDIN.
NEW ZEALAND.
Consulting Engineer.

GENERAL ARRANGEMENT OF
—DREDGE—
— FOR THE FRASER FLAT GOLD-DREDGING Co. LTD. —

— ELEVATION. —

— *Scale of Feet.* —

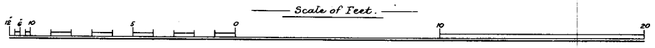
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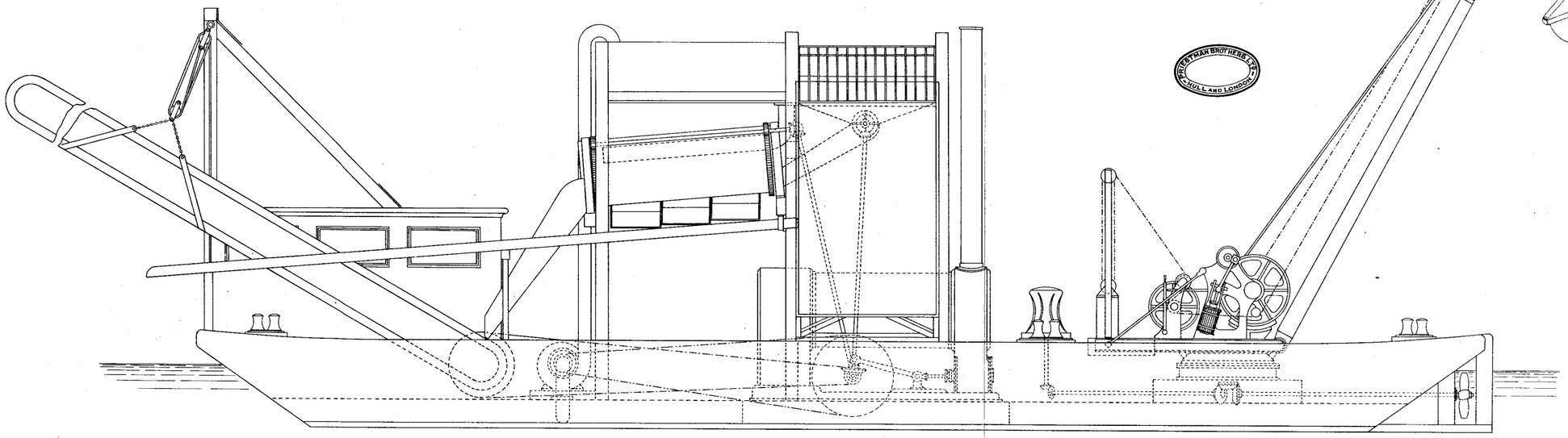


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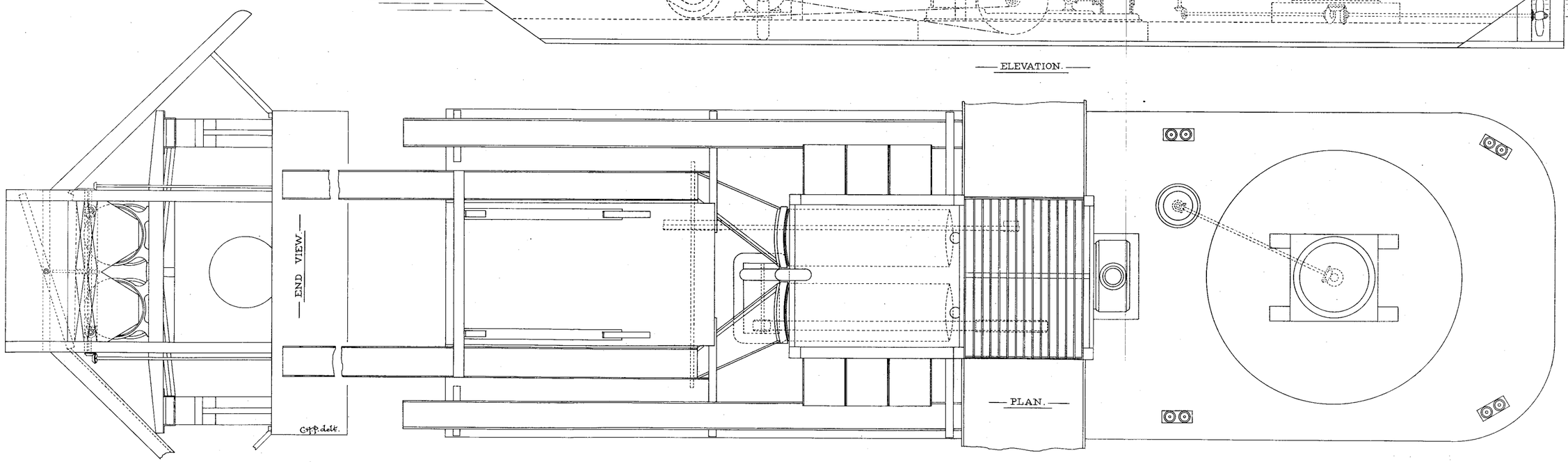
GENERAL ARRANGEMENT OF PRIESTMAN DREDGER AND GOLD - WASHING MACHINERY.

Scale of Feet.





ELEVATION.



PLAN.

of these rocks, but such is not the case. They contain quantities of well-rounded pebbles of dense quartzites, quartzoze conglomerates, and finely grained slates. These are especially noticeable in the drifts of the Dunstan and Earnscleugh flats. As these rocks are hardly known to occur *in situ* within the present watershed, they must either have been brought into the deposits by other agencies than existing ones, or they are the remains of a formation at one time overlying the schists. The gravels of the Mataura Valley, on the other hand, consist almost entirely of quartzites, ranging in texture from those so fine grained that their clastic nature can only be discerned under the microscope to coarse conglomerates. These drifts contain gold differing in form from that found in purely schistose wash, and as both kinds of gravel are intermixed in the Molyneux drifts, so are both forms of gold.

The mica-schist rocks, when subjected to erosive agencies, whether glacial or aqueous, do not form rounded pebbles. The difference in the hardness of the quartz and mica laminations precludes this. Water-worn fragments of schist are always irregular in their outline, and when travelling along with gold do not exert the same pounding and flattening effects upon the grains that well-rounded pebbles do. A considerable quantity of micaceous silt always results from the erosion of mica-schist rocks. This finely divided material is carried by the rivers in suspension until it reaches still water, where it is deposited among the gravels; if the conditions remain stationary for any length of time it forms seams of clay, which are prejudicial in more ways than one to the saving of fine gold.

The bottom upon which the auriferous gravels rest is one of great importance. The difficulty of dredging upon a hard-rock bottom has already been mentioned. Soft-rock bottoms occur sometimes near the margins of old lake-beds, and nearly always in flats which have been formed by the accidental damming of small streams, and in the beds of rivers where the flow of water has not been sufficient to scour the rock. In a soft-schist bottom the rock is frequently decomposed to a depth of 2 ft.; the change appears to penetrate deepest where the dip of the rock is least. In outward aspect the rock is unaltered, the foliations and flakes of mica appear unchanged, but the rock can be crushed to powder with the hands, the quartz laminations being quite soft. A better bottom for dredging can hardly be conceived. The term "false bottom" is generally used by miners to designate a stratum other than rock upon which an auriferous wash rests. It may mean a band of clay in beds of gravel, or a layer of barren gravel with gold-bearing wash on the top. In a more restricted sense it is used to denote a bed of pipe or other clay often containing fresh-water shells: this is the only bottom there is any possibility of reaching in the wide flats through which many of the Otago rivers flow. It represents the old lake-bed, and was formed by deposition at a time when nothing but silt was brought into the lake by its tributary streams. It can be seen on the margin of the Mataura Lake basin, but is probably at too great a depth to be reached by dredging anywhere along the existing river-channel. It forms the bottom upon which the wash rests in the upper portion of the Ida and Manuherikia Valleys, and in other places. It depends in a great measure upon the nature of the clay whether it forms a good dredging-bottom. If the clay is soft but at the same time tenacious, it not only retains any gold imbedded in it, but has also a tendency to pick up any loose gold with which it may come into contact during its passage through the revolving screen or sluice-box. A bed of lignite forms an excellent dredging-bottom, but can only be found underlying recent deposits.

The stripping, or overburden, is another important factor in dredging operations. A valley-bottom or river-flat subject to frequent flooding is nearly always covered with a layer of clay. Where the stream that runs through the ground is swift, and the natural fall of the surface comparatively steep, the deposit of clay is not so deep, as each recurring flood has a tendency to remove some of the silt deposited when the last flood was receding; but when the fall of the ground is small each flood adds to the layer of clay until it often reaches a thickness which renders dredging unprofitable. A clay formed by the erosion of the mica-shists is more friable and less detrimental to gold-saving than the stiffer and more tenacious clays derived from the clay slates and other rocks. The depth of overburden of this nature sufficient to render the working of the ground unprofitable depends upon the depth and richness of the wash below. There is no doubt that sooner or later the attention of engineers will be directed to the construction of dredges that will enable the stripping to be entirely removed before the wash is lifted. Bands of tough clay interstratified with the wash are of rare occurrence; when they do exist they are more inimical to gold-saving than when the clay forms either the overburden or the bottom.

The Physiography of the Gold.

The mass of individual grains of gold appear to be relative to the distance the gold and the enclosing wash has travelled from its original source. Whether the gold of Otago was derived from silicified rocks and lodes, or whether, as held by some, the grains were built up in the gravels from solutions, does not affect the question, as both drifts and gold have been redistributed more than once. The shape of the grains is determined by the nature of the gravels with which they are associated, and the forces which have transported them. Only a small portion of the gold found in the Otago rivers was set free from its matrix by the rivers themselves. Denudation has in ages past worn down gold-bearing formations, and river systems now extinct have deposited the resulting auriferous drifts on the flanks of the mountains which form the watersheds of the rivers as we know them. These drifts are present on the slopes of the mountains surrounding the Maniototo Plain, on the Dunstan Range from St. Bathan's to Alexandra, on the lower slopes of the Carrick Range at Bannockburn, and in many other places. The deposits have been cut through and partially removed by the mountain torrents which form the tributaries of the rivers of to-day, and their golden wealth is scattered in the beds of the streams in ever-increasing fineness as the distance from the source is lengthened.

The finest alluvial gold yet found is that which occurs on the ocean-beaches either adjacent to the mouth of gold-bearing rivers, or upon beaches where an ocean-current impinges after sweeping past one of these estuaries. There can be no doubt this gold is brought to the sea by the rivers. It is the most difficult of any to save, not owing so much to its fine state of division as to the shape it has assumed during its travels. At least 50 per cent. of the grains are doubly concave, the centre of the scale being considerably thinner than the edge. Measurements made by Clarke of gold in the magnetic ironsands of the Californian beaches gave a diameter to the smallest scales of 0·003 in. to 0·0035 in. Scales of gold not more than 0·002 in. in diameter by a thickness of 0·0005 in. are frequently met with on the beaches of Southern Otago. The difficulty experienced in saving this class of gold is greatly increased owing to its always being associated with grains of magnetite and ilmenite, minerals of high specific gravity. In experiments made by the writer, a cubic yard of beach-sand was passed through a strake over coir matting; 80 lb. of concentrates resulted, which assayed 12 dwt. 10 gr. of gold to the ton, equal to 10·6 gr. per cubic yard of sand. From 10 to 15 per cent. of the gold was lost in concentrating. By contact amalgamation of the concentrates only about 60 per cent. of the gold could be extracted; by frictional amalgamation nearly 90 per cent. was recovered, a little of the quicksilver being floured. The residues assayed 1 dwt. 7 gr. per ton. After two hours and a half roasting at a red heat in a muffle furnace very little magnetic iron was left unconverted. The roast was sufficient to permit the gold to be removed by a 0·35-per-cent. chlorine solution in fifty hours, the extraction being practically complete. The best method of working these extensive littoral deposits by dredging is a problem for the near future.

A gold of a somewhat similar character is found on the beaches of the Mataura River, almost from its source to within a few miles of Gore. Well-rounded smooth pebbles form the drift, and the continual pounding of these pebbles has reduced the gold to a state of extremely fine subdivision, and at the same time produced in some of the particles the double concavity mentioned before. Very little of this gold sinks into the gravels; it is found on the beaches, which are sometimes rich enough for skimming and cradling. The gold is deposited upon a beach during a fresh in the river, and is left about high-water level as the river recedes. The next rise, instead of covering it with silt, floats it away to a beach further down the stream, hence the richness of the surface layer. There is always a quantity of black sand caught with the gold, but as the latter can be amalgamated without difficulty a separation is easily effected.

The gold of the Clutha River seldom exhibits concavities; when in scales the surfaces are either convex or plane, the smaller grains are generally oval in outline, and, compared with beach or Mataura gold, easily arrested on the tables. The results of some measurements of the finest gold saved by one of the electric dredges, made by the writer and published in the *Mining Journal*, were afterwards confirmed by the New South Wales Government expert sent to report upon the dredging industry of New Zealand. The extract reads, "A sample of fine gold from the Electric Company's dredges, about 2 gr. in weight, which had been sifted through a sieve of 3,600 holes to the inch was again sifted through one of 4,900 holes, and the gold which passed through sorted under a powerful lens. One hundred of the smallest of these pieces were thus selected, and examined under a microscope. Measured with a micrometer, their dimensions in fractions of an inch varied between 0·009 and 0·006, and 0·003 and 0·002, the mean of twenty measurements being 0·0065 × 0·0042. The hundred particles were then carefully weighed, and found to have a mass of 0·097 of a grain. The mean weight of the pieces was therefore 0·00097, or a little under one-thousandth of a grain." Beyond proving that very fine gold exists in the Kawarau near its junction with the Clutha, and consequently in the Clutha lower down, and the limit in size of the particles of gold saved on the tables, the measurements afford little information. What proportion of gold in this fine state of division is saved compared with what is lost cannot be determined. No gold-saving appliances on Otago dredges are constructed with a view to saving gold of this description, and what little is caught is more the result of accident than design. That fine gold is present in the wash is made evident by carefully panning down dish prospects.

The gold of the valley deposits and flats in which quartz-drifts have accumulated is similar to the gold contained in the corresponding undisturbed deposits occurring on the ranges. A simple reassortment of the gravels has taken place, frequently resulting in their enrichment. The gold is tabular, often containing fragments of quartz foreign to the gold. These quartz splinters have been forced into the soft metal during its travels. The gold is sometimes stained or tarnished, generally with a brown discolouration, and occasionally with a white metallic stain like electro-silver-plating laid on in patches. The flattened grains frequently attain a diameter greater than $\frac{1}{8}$ in.; the thickness is variable. The heavy material saved with the gold is ilmenite, magnetite, garnet, scheelite, and marcasite. Not more than one-third is magnetic; but as very little of the gold refuses to amalgamate with mercury a satisfactory separation can always be made. It is impossible to separate the heavy material from the gold by panning without loss.

In the (*d*) lake-bed deposits the gold resembles the containing wash, in that it is little water-worn; the finest grains seldom bear signs of having been battered by the breccias in transport. No difficulty is experienced in separating the gold from the black-sand residues by panning. The grains are heavier in proportion to their surface area than those in any other class of deposit. The whole of the gold lifted by a dredge working on ground of this nature should be easily saved.

The Efficiency of Gold-saving Appliances.

In a metallurgical sense the gold-saving appliances in use on dredges consist of a sizing and concentrating plant. The sizing is done in a perforated screen, and the concentration on inclined tables covered with coir matting. Any gold too large to pass through the perforations in the screen is generally lost. The gold that escapes arrest in this way is hardly worth taking into

account, especially upon dredges working in the beds of large streams. The heaviest loss occurs with gold in a fine state of division or in thin scales. No matter how carefully and concientiously ground may be tested by shaft-sinking and the value of its gold contents ascertained, there is always a discrepancy between the prospecting results and those obtained in dredging over the same areas. The failure of the dredge to secure the same results as the cradle is due to the loss of fine gold caused by passing much larger quantities of material over similar widths of concentrating-tables in the same time.

It is never attempted in prospecting to approach as nearly as possible to the conditions under which the same material will be treated by a dredge, nor, on the other hand, has any serious attempt been made to reduce the quantity of material lifted, so that the dredge can be compared to the cradle. The breadth of concentrating-tables is of greater importance in gold-saving than the length, although the latter is an important factor. For this reason comparisons between the tables of dredges and the sluice-boxes used in hydraulic mining cannot be made. It is doubtful whether some sluicing plants in use in Otago, with their narrow boxes, are as successful as the dredges in saving the finest gold.

In the following table the working-conditions of the apron of a quartz-mill is added. It is only of value in that the gold saved on these tables is in its fine state of division similar to the gold lost from the dredge-tables. The question of matting *versus* amalgamated plates need not be taken into account, as all the gold saved at the Phœnix and some other Otago mills was caught first on blanket-strakes, and the concentrates subsequently amalgamated in barrels. The following are the particulars of the tables on some of the latest dredges, and the conditions under which the washdirt will be passed over them at a time when the dredge is running with full buckets :—

Dredge.	Capacity of Buckets, in Cubic Feet.	Rate of Discharge per Minute.	Diameter of Pump, in Inches.	Capacity of Pump, in Gallons per Minute.*	Width of Tables, in Feet.	Material lifted per Minute, in Cubic Yards.	Material passed over Tables per Minute, in Cubic Feet.†	Material passed over Tables per Foot of Width per Minute, in Cubic Inches.	Water passed over Tables per Minute per Foot of Spread.‡		Proportion of Sand to Water.	Remarks.
									Gals.	Cub. In.		
Fraser's Flat	7	10	12	2,300	21	2·6	35	2,800	98	27,168	1 to 9·43	Fine material. It is estimated that one-half the quantity lifted will pass through the perforations on to the tables.
Olrig ..	4¾	10	10	1,600	18	1·76	8	768	80	22,180	1 to 28·8	Manuherikia ordinary river-drift.
Leviathan ..	4¾	10	15	3,800	81	1·76	31·6	674	42	11,645	1 to 17·2	A littoral deposit of shingle and black sand. It is estimated that 66 per cent. of the material lifted will pass over the tables.
Waimumu§	4½	12	12	2,300	28	2	9	555	74	20,519	1 to 37	Before alterations; valley deposit.
Mokoia and Buller Junction	5	12	12	2,300	15	2·2	10	1,152	138	38,270	1 to 33	River-gravels.
Ordinary quartz-mill practice‖	..	..	..	..	..	..	..	36	4·4	970	1 to 27	

It will be seen by the above table that the quantity of solid matter contained in the pulp as it passes on to the matting varies between one to nine and a half and one to thirty-seven times its bulk of water, and that the mean of the five dredges is one to twenty-five. Very few, if any, dredges treat their washdirt under the ideal conditions given above. In most instances nearly all the fine material that passes the perforations in the screen does so in the first 6 ft. or 7 ft., and the pulp frequently passes over the first two or three strakes in waves of thinly diluted mud as each bucket discharges, comparatively clean water running over the balance of the tables. The result is that the larger proportion of the fine material passes the matting diluted with probably six to eight times its bulk of water. Most of the gold saved is caught on the first three mats, and nearly all the gold that escapes is lost in passing over them. Any fine or scaly gold that remains in the screen until the first three mats are passed, and then falls with the comparatively clear water, is in nearly every instance arrested.

The most experienced miners sluicing the black-sand deposits on the West Coast are in favour of a large supply of water, and a fall to the strakes approaching 2 in. to the foot. They use plush-covered tables, but increase their spread to such an extent that the quantity of sand passing over each foot of width is less than could be attempted on a dredge, and every care is taken to see that the gold-bearing sands are spread evenly over the whole breadth of the tables.

* The lifting-capacity of the pumps is based upon Tangye Brothers' calculations. † The quantity of material passed over the tables in dredging ordinary river-gravels is estimated at one-sixth of that lifted. This estimate is based upon cradle trials of different gravels, the hopper having $\frac{5}{16}$ in. perforations. ‡ Ninety per cent. of the water lifted is presumed to pass over the tables, the balance leaving the screen with the heavy material. § The Waimumu drift is a valley deposit; the estimate of the quantity passing over the tables is very low, probably one-quarter to one-fifth of the quantity lifted would be nearer the truth with this dredge. ‖ With regard to battery practice, Rose says the water used per stamp is 1¾ gallons in Colorado, 2½ gallons in California, and 5½ gallons on the Rand. The above table is based upon 3½ gallons per minute, and the crushing-power of a stamp 2 tons in twenty-four hours.

Among the first improvements that will be made in the gold-saving appliances in use on dredges will be the addition to every dredge of a perfect distributer. The width of the tables will also be increased, especially when the dredge is designed to treat gravels known to contain very fine or scaly gold. Mechanical engineers will also find it advantageous to vary the construction of dredges designed to work gravels covered with a thick layer of tenacious clay, to enable the stripping to be done and the spoil elevated without being washed through the screen, especially where the water-supply is limited. Upon some of the valley deposits a specially constructed dredge to do the stripping alone might even be profitable. With the large spread of tables required for beach-sands, the ingenuity of the inventor may be directed to the necessity of making the mats used on the tables self-washing, as in the Frue and Triumph vanners. When working on beach deposits the problem of preventing the dredged material from running back into the dredging basin or paddock in the form of a quicksand has yet to be solved. It is frequently remarked that dredging as an industry is yet in its infancy, and the same may be said with equal truth of the dredges.

Regarding the efficiency of the men employed, successful dredging depends greatly upon the skill of the winchman. A dexterous winchman has gained his knowledge by experience. The art of handling a dredge properly and keeping the buckets to the face so as to lift to the best advantage cannot be learned from precept. The demand for competent hands is so constant, not only to supply local wants, but also for manning machines in the Australian Colonies, that a man qualified to handle the winches of a dredge adroitly can readily obtain an appointment, and will naturally sell his knowledge to the highest bidder. It thus frequently happens that there is only one expert winchman besides the manager and two men gaining experience on a dredging staff. The class of men who are taking up gold-dredging in New Zealand are of the right stamp, and able to use their brains as well as their hands. The present lack of skilled labour will therefore come to an end in a few years.

SCHEELITE.

SCHEELITE (tungstate of lime) is found associated with quartz in the Otago Lake District, at Macrae's, and in Marlborough. The only place at which it is being commercially worked is at the mine of Messrs. Donaldson Brothers, Macrae's, Otago, where the scheelite is separated from the crushed quartz by concentration. About 100 tons have been shipped to Europe during the year. The yield of tungstic acid is about 67 per cent. This acid is used in the manufacture of steel for armour-plates and ordnance, also for rendering fibrous and textile materials non-inflammable.

It has recently been reported that a discovery of scheelite of good commercial value has been made near Bendigo, Otago.

CINNABAR.

A SAMPLE of ore sent me by Mr. T. W. Bruce, of Inchbonnie, which he had obtained from near the Seven-mile, Taipo, was submitted to Mr. Skey for analysis. Mr. Skey reports the following results:—

	Per Cent.
Cinnabar	91·88
Hæmatite	6·83
Siliceous matters	1·29
	100·00

yielding 79·2 per cent. of mercury.

A discovery of this mineral has also been made between Waipori and Waitahuna, Otago. Examination on behalf of the parties interested has shown that there are good grounds for recommending thorough and systematic prospecting operations.

OIL-SHALE.

ALTHOUGH the existence of oil-shale deposits in various parts of the colony has been known for several years, nothing has been done to develop any of them until recently. The deposits at Orepuki have been leased by an English company, and extensive works are now in course of erection under the supervision of Mr. Robert Dunlop, a gentleman of high scientific attainments, who has had a lengthy experience as manager of similar works in Scotland. Mr. M. Straw is mine-manager.

I have also to thank Mr. Dunlop for the following paper on the working of oil-shale:—

"The oil industry in Britain extends away back into the seventeenth century, as in the year 1694 a patent was granted for the production of pitch, tar, and oyle (oil) out of a kind of stone. Very little progress was made, however, until the year 1781, in which year the Earl of Dundonald (of whom the Dundonald of Boer fame is a lineal descendant) discovered how to make oil and tar from a kind of coal. He carried on his destructive distillation in ovens or retorts very similar to

those in use at the present day. Early in the nineteenth century many valuable discoveries were made, such as paraffine from wood-tar by Reichenback, in bituminous shale by Lawrent, and in coal-tar by Dumas; but those products were simply scientific curiosities, and it was reserved for Dr. James Young, of Renfrewshire, to make them marketable products. In 1847, when manager of a chemical work at Liverpool, his attention was directed by Dr. Lyon Playfair to a small stream of oil flowing from the top of a coal-working at Alfreton, in Derbyshire, and from this oil he succeeded in extracting marketable products, such as burning-oil, wax, and lubricating-oil. When the supply of this oil got exhausted he naturally looked for other sources, and, like all true scientific men, he imitated what he thought was nature's method—the action of a gentle heat on coal or shale. While he was still experimenting a highly bituminous coal was discovered in Scotland, known as the Boghead coal (afterwards Torbane-hill mineral), which he found to contain from 120 to 130 gallons of oil per ton. It was to work this shale that he took out his patent, No. 13292, and it was this shale which formed the subject of the famous lawsuit.

"The discovery of enormous quantities of petroleum in America so much reduced the market-value of the products in Scotland that the history of the oil trade for the last twenty years has been one great struggle against excessive competition from abroad. No sooner was an improvement made, and cost reduced to meet a decline in the selling-price, than another decline had to be faced; and I am quite safe in saying that no other industry in Scotland has fought such a noble battle to save it from extinction. The cost of refining a gallon of crude oil has been reduced from 2·2d. to 0·7d., and this includes the refining of the wax, and the yield of sulphate of ammonia has been raised from a few pounds up to from 40 lb. to 60 lb. per ton.

"Petroleum is found in different geological periods of time. In the United States and Canada it is generally found stored up in the porous sandstones or limestones of the Devonian or Silurian period. In Egypt, India, and Roumania it is found in the Tertiary strata, and at Baku it is found in the Later Tertiary and Cretaceous and Jurassic ages. In Galicia it is found in the Lower Eocene and Upper Cretaceous rocks. In Hanover in the Gault beds of the Jurassic and also in the Triassic age. In New Zealand I have examined over half a dozen shales, and they all appear to belong to the Tertiary or Jurassic age.

"Shale is now well known to be of either vegetable or animal origin, and sometimes of both. In Scotland some of the shales are almost entirely made up of a small microscopic organism called Entomostraca. Shale-oils are generally composed of carbon and hydrogen, with nitrogen, sulphur, and oxygen in small quantities. Most of the nitrogen which the shale contains is driven off as ammonia and some as organic bases. The oil when refined is a comparatively pure hydrocarbon, and the slower and more gently the shale is cooked the better the oil. The element carbon is only able to take up or combine chemically with four atoms of hydrogen to one of carbon, which forms a type molecule of the paraffine series, and is sometimes called a 'saturated hydrocarbon,' because the number of atoms of hydrogen exist in the fullest proportion in which those two elements can combine. If the retort is overheated the molecule loses hydrogen, and is formed into the olefin series (two atoms of carbon to six of hydrogen), and if still more heat is applied it goes into the benzole series (three of carbon to eight of hydrogen); hence the use of steam to prevent the paraffine molecule from losing its hydrogen. A better method for preserving the paraffine molecule or of building up the lower series to the higher has still to be discovered, and would be one of the best discoveries in the history of the oil trade.

"The plant which is being laid down at Orepuki is one of the latest and most improved type, the result of fifty years' research by many workers in Scotland. The retorts are the best known for this particular shale, and, while they will be able to preserve the oil, it is expected they will also give a by-yield of sulphate of ammonia. The shale-field has been tested over a large area and found to be nearly uniform in thickness, and giving a quantity of oil over the average shale in Scotland. The mine-tunnel has been put down over 900 ft. at a declivity of 1 in 4, and is in the centre of a basin, so that the shale and water will go to the bottom without any great expenditure of power. When the shale comes out of the mine it is put into a breaking-machine, and when broken is raised by elevators and put into the hoppers on top of the retorts. The shale in the retort is kept in continuous motion by machinery at the bottom, and when exhausted runs away at the bottom. By means of a fan the oily vapour is drawn from the retorts through a series of condensers, where the gases are cooled, and the liquid portion (oil and water) runs into a large receiving-tank. The gas is passed on through two large towers, where it is first scrubbed with water, which robs it of its ammonia-gas, and then with oil, which robs it of its spirits. The gas then goes on to the retorts, where it is used for firing. Sulphate of ammonia is extracted from the water which comes over along with the crude oil, and the crude oil is pumped up into a large tank, separated from any water which it may contain, and then run into the still. The still is then heated up, and the oil-vapour passes over and is again condensed and run into a receiver. During the distillation steam is passed through the still to bring over the oil at a lower temperature, and preserve the paraffine molecule. After the distillation is finished there is a coke left in the still, which is used for making moulders, blacking, and for burning in parlour-fires, as it gives a good heat and practically no ash. The oil in the receiver is next treated with sulphuric acid and soda-hydrate and again distilled, and this time cut into light and heavy portions. From the light portion burning-oil is obtained, and from the heavy, lubricating-oils. The light portion is again treated, distilled, and again treated, and is finished burning-oil. The heavy portion goes to the paraffine-shed, where it is frozen and the paraffine-wax extracted. The oily portion is then again treated and distilled, and cut up into the different grades of lubricating-oil. These lubricating-oils are again frozen and more wax extracted, again treated, and are ready for the market. The paraffine-wax is put into a sweating-house, where the temperature is gradually raised. Any oil which it contains comes away first, bringing a lot of impurities with it, then the lower melting-point wax, and lastly the high-melting-point wax, which all run into different receivers. This process has generally to be

gone through twice before it is ready for the final touch, which is to pass it through animal charcoal, which decolourises it. It is then run into cakes, and is ready for the market.

"The high-melting-point wax is used for candle-making, and the lower melting-points are used for match-making and many other purposes. When dissolved in spirit low-melting-point wax makes a splendid damp-repeller, and when put on to a house in summer is said to last a long time. A coating of wax is said to preserve fruit and butchers' meat. It is used by brewers for coating the inside of beer-barrels, and by weavers in the manufacture of yarn and cloth. It is also used for making cork impervious to air and as a non-conductor by electricians. One of the bad uses it is put to is to adulterate sweet-meats, which practice was severely criticized in *Science Siftings* some time ago.

"Paraffine-wax, when well refined, is a wax-like, white or colourless crystalline substance, and is not acted on by either acids or alkalies, and is one of the most stable substances known. The spirit extracted from the gas is called naphtha, and has a specific gravity of 730 to 760, and is used for extracting fats, oils, and similar bodies, and in the preparation of paint and varnishes. The acid and soda tars, when neutralised, are used for making briquettes and for asphalting purposes.

"When the erections are completed, and the work in full going order, the works at Orepuki will put through 2,000 gallons of crude oil per day, and this output can be doubled at a comparatively small cost."

Copies of the examination papers used at the last sitting of candidates for certificates of competency as mine-managers and battery superintendents under "The Mining Act, 1898," and as mine-managers under "The Coal Mines Act, 1891"; two papers of interest in connection with mining engineering; the annual reports of Inspectors of Mines, Wardens, Managers of Government water-races, and Engineer for water-conservation; together with list of holders of certificates as metalliferous and coal-mine managers, battery superintendents, and winding-engine men, and the usual schedules, will be found as an appendix to this report.

I have, &c.,

JOHN HAYES,

Inspecting Engineer.

The Hon. the Minister of Mines.

APPENDIX.

MINE-MANAGERS' AND BATTERY SUPERINTENDENTS' EXAMINATION PAPERS.

QUESTIONS USED IN EXAMINATION OF MINING MANAGERS FOR FIRST-CLASS CERTIFICATES.

("The Mining Act, 1898.")

FIRST DAY.—TIME: 9 A.M. TO 12 NOON.

[Candidates must attempt to answer every question. All calculations to be shown in detail.]

SUBJECT A.—*The Laying-out and Construction of Shafts, Chambers, Main Drives or Levels, Adits, Uprises, and Stopes.*

1. Describe the best method of timbering a main shaft, and how you would allow for pumping, winding, and ladder-way. Give by sketch the size of shaft and compartments.
2. In opening a chamber from the shaft, show how you would timber it, and how you would allow for the quick return of empty and full trucks to and from the shaft.
3. Show by sketch how you would construct tanks at change of lifts in a pumping shaft, and the method of fixing supports to pumps and rising mains.
4. If ore is being drawn from different levels in a mine, and the shaft being sunk continuously in hard wet ground, state the precautions you would use to protect the efficiency of the pumps and the protection and safety of the men sinking the shaft.

5. Describe a safe method of sinking through wet alluvial ground having 15 ft. of running sand. In opening out a level from the shaft where the headings over the auriferous wash are composed of boulders and loose gravel, how would you timber the ground to secure the shaft to provide for the safety of the men, and what method would you adopt in blocking out the wash-drift?

6. Give size of a working shaft to haul 200 tons per day, and show by sketch where the pump and ladder-way should be.

7. In driving through bad ground, show how you would fix face-boards; and how you would stay the main and false sets.

FIRST DAY.—TIME: 2 P.M. TO 5 P.M.

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. Show the best method of fitting frames in a main shaft having pumping, winding, and ladder compartments. If planks are used, how would you fit them, and what size, to show strength and workmanship?

2. What size would you have the main level, and how would you fit the sets and stay them in place? In what kind of ground would you use sole-pieces, and what workable grade would you allow for haulage and drainage?

3. Show by sketch how you would timber double and single passes, and what provision you would make for the safety of men going to and coming from the stopes.

4. Show how you would timber stopes on a reef 10 ft. wide, and the distance between each pass; also how you would provide for filling the stopes, and the number of stopes you consider safe to be left open.

5. Show by sketch how you would arrange the full and empty trucks to pass each other at the chamber; also in the main level.

6. In putting an uprise through loose ground state how you would timber it, and the precaution necessary for the safety of the men.

7. Show by calculation the breaking strain and also the safe load on a cap-piece of black-birch timber 5 ft. long and 12 in. in diameter between the supports; also the crushing strain on a prop 6 ft. long and 12 in. in diameter of the same class of timber.

SECOND DAY.—TIME: 9 A.M. TO 12 NOON.

SUBJECT E.—*The Ventilation of Mines and Composition of Gases.*

1. Name the different gases likely to be met in working metalliferous mines, their weight and composition compared to common air, and how you would distinguish them to give the percentage deleterious to workmen.

2. State the general principles on which ventilation is based, and show how you would find the amount of air passing through an air-course. An air-course was carrying 20,432 cubic feet per minute, and you had to divide it into three splits of equal perimeters but different lengths—

No. 1, 200 yards long;
No. 2, 400 yards long;
No. 3, 600 yards long:

Calculate the amount of air passing through each air-course.

3. How would you calculate the difference in weight per square foot, the thermometer 50 degrees at the downcast and 150 degrees at the upcast; barometer reading 30 at a depth of 600 ft.?

4. State the quantity of carbonic-acid gas given off by each workman, by a candle, by explosives, and from other sources per hour, and the quantity of air per minute required to remove deleterious effects to workman.

5. Describe the best method of ventilating a mine by natural ventilation, and give the different appliances used for mechanical ventilation.

6. How would you treat a person overcome by gas in a mine in the absence of a doctor?

SECOND DAY.—TIME: 2 P.M. TO 5 P.M.

SUBJECT F.—*Tapping Water in Mines, and the Mode of constructing Dams in Underground Workings to keep the Water back.*

1. Show by calculation the pressure there is on a dam 10 ft. long and 8 ft. high, built in a drive, holding water back to a height of 150 ft. Show by sketch how you would construct such a dam of timber; also of brick and concrete.

2. If water was met with in driving a crosscut from the main shaft, what method would you adopt to prevent the water going down the main shaft to where men were sinking?

3. In driving a drainage-tunnel through solid rock to tap water, known to be of great pressure, what precaution would you take to insure the safety of the men?

4. What precaution would you take in tapping water underground in old alluvial workings where the ground is likely to be caved in; and state fully the method you would adopt to drain the water off without risk to property and danger of the men?

SUBJECT G.—*Blasting and the Use of Explosives.*

1. Give the names, and compositions, and relative strength of explosives commonly used in mines. From your experience in using explosives, what explosive used in blasting produces the least injurious effect on the workmen in mines? Give your reasons fully.

2. Give the maximum temperature that it is safe to store dynamite in. If frozen, how would you act? If combustion is not complete, can you point out the cause and effect?

3. In tamping explosives what materials would you use? How would you tamp the charge, and what appliance would you use? If a shot missed fire, give the precaution you would take to prevent an accident.

4. Calculate the number of ounces of dynamite that would be required for a bore 6 ft. deep, 1 in. diameter, and line of least resistance 4 ft.

THIRD DAY.—TIME: 9 A.M. TO 12 NOON.

SUBJECT I.—*A Knowledge of Underground Surveying, and the Making of Plans of Underground Workings.*

(*a.*) State whether the compass can be relied on for underground surveys, and give your reasons for the answer. If you had a choice of a compass or a theodolite, which would you use?

(*b.*) If you are obliged to make a magnetic underground survey, state what means you would use to check the correctness of the survey, and how you would know that the surface and underground survey are on the same meridian; or how you would reduce them to the same, supposing one to be magnetic and the other true.

(*c.*) The position of a peg at the end of a drive is N. 24006 links, and E. 3611 links: what is the bearing and distance to a point situated on the boundary of the claim N. 24520 and E. 4910—both co-ordinated from the same point?

(*d.*) Describe in writing, in the order named, the adjustments of a plane theodolite under the headings of "Horizontal level," "Vertical level," "Collimation," "Parallax"; and state what others are necessary. Also describe a miner's compass and its adjustments. (In both of these subjects the candidate will be examined by the Supervisor, who must furnish a separate report on each candidate's knowledge of the subject.)

(*e.*) Describe the method of plotting the plan, and how the area of the claim was ascertained, and what drawing-instruments were used.

(*f.*) What are the regulation marks that should define the boundaries of a claim under the Mines Act? And state sizes.

(*g.*) State where you learnt surveying, and who taught you, and how long you have had practice at surveying.

THIRD DAY.—TIME: 2 P.M. TO 5 P.M.

SUBJECT C.—*Pumping Appliances and the Drainage of Mines.*

1. Show by sketch how you would arrange for two lifts of pumps in a shaft, and how they are connected with the motive-power.

2. If the plunger of a single-acting pump is travelling 100 ft. per minute, show by calculation its diameter necessary to lift 2,000 gallons of water per minute.

3. Describe different classes of pumps used in "mine-drainage," and name those with which you have had practical experience; and state under what conditions certain pumps are more advantageous to use than others.

SUBJECT D.—*The Haulage in Shafts and on Underground Planes; also the Strength of Haulage Ropes and Chains.*

1. What is the lowest grade a self-acting incline will work?

2. Assume the working-pressure on a boiler to be 70 lb. per square inch, the safety-valve of which is 3½ in. diameter: give sketch showing length of lever, and weight required at end of same, to allow of steam blowing off at pressure named.

3. Show by calculation horse-power of engine required to haul 700 tons per shift of seven hours up an incline 1,500 ft. long against a grade 1 in 40, making allowance for friction; and give sketch showing general arrangement of such an engine, stating size rope to be used.

4. Show by sketch the general arrangement of setting for a Lancashire boiler; and also, by calculation, the safe working-pressure of such a boiler, whose diameter is 7 ft., and made of steel plates ⅝ in. in thickness and double-riveted, the ends being stayed to correspond with the strength of the shell.

FOURTH DAY.—TIME: 9 A.M. TO 12 NOON.

SUBJECT H.—*The Effect that Faults, Slides, and Mullock-bars have on Lodes, and how to ascertain the Direction of Slides and Heavals.*

1. How would you ascertain the cause that displaced a faulted lode, and how would you proceed to recover it again?

2. Show by sketches the difference between faults, slides, cross-courses, heaves, dykes, and horses.

3. What is the difference and rates between smaller and greater angles, and which would you follow to recover the lost lode?

SUBJECT J.—*A Knowledge of the Different Rocks where Gold, Silver, Tin, Copper, Zinc, Lead, and Antimony are found, and the Formation of Lodes and Leads.*

1. What metallic ores are found in slate, schist, gneiss, serpentine, limestone, and andesite?
2. Give the names and compositions of the ores of lead, copper, tin, antimony, zinc, gold, and silver, and where found in New Zealand.
3. Can you distinguish between the different lodes, and class them accordingly?

SUBJECT R.—*A Knowledge of Arithmetic and Method of keeping Mining Accounts.*

1. If 6 persons earn in 21 weeks £120, how much will 14 persons earn in 46 weeks?
2. What is the square and cube root of 428,661,064?
3. If the assay of ore gave 15 dwt. per ton, and the mill recovered 69 per cent., what is the loss and recovery from 439 tons?
4. Show how you would calculate the number of cubic feet to a ton of quartz in the solid; also the space it would occupy when broken to go through a 3 in. ring.
5. A block of stone between levels and passes measures 30 ft. long and 111 ft. high; at one pass the reef was 11 ft. thick, tapering off to 3 ft. at the other pass: how many cubic yards in the block?
6. A manager gave instructions to have 50 tons drawn from No. 1 level more than No. 2 level to equalise mill returns; the tally drawn from both gave 500 tons: how much was drawn from each level?
7. Show how you would tabulate the method of keeping accounts at a mine, under different headings, brought down with the total expenditure for one month.

FOURTH DAY.—TIME: 2 P.M. TO 5 P.M.

SUBJECT K.—*The Working of Dredges, and the Working of Appliances required to carry on Gold-dredging Operations.*

1. What provision would you make to disintegrate the ground if the gravel was cemented together to such an extent that it could not be easily scooped up by the buckets?
2. Describe fully how you would work the dredge to keep the buckets always lifting full, and the appliances required to do the same.
3. How is an elevator placed on a dredge? What is its use?

SUBJECT L.—*The Strength of Ropes, Chains, Machinery, and Appliances necessary to carry on Dredging Operations.*

1. If a dredge had a beam of 25 ft. at the water-line and 15 ft. on the bottom, and drawing 4 ft. of water, show by calculation the strain on the front mooring ropes or chains if the dredge were working in the river where the velocity of the water was equal to 10 ft. per second.
2. Describe the different appliances necessary to carry on dredging operations on a river subject to floods, and the provision you would make for the safety of the workmen in the event of an accident occurring to swamp or sink the dredge.

FIFTH DAY.—TIME: 9 A.M. TO 1 P.M.

SUBJECT O.—*The Diameter, Strength, and Jointing of Hydraulic Pipes required to convey specified Heads of Water.*

1. Required, the diameter of a hydraulic nozzle to discharge eight sluice-heads of water, the head of water on the nozzle being 160 ft. Show by calculation.
2. Show by calculation the thickness of a wrought-iron riveted pipe 18 in. in diameter to stand a pressure of 200 ft. head of water; allowing 3 per cent. as a factor of safety.

SUBJECT P.—*The Construction of Water- and Tail-races.*

1. Show by calculation the number of sluice-heads of water a ditch cut in ordinary gravel ground, with a fall of 12 ft. to the mile, will convey, the width in the bottom being 3 ft., the sides having a slope of 6 in. to 1 ft., and the depth of water in the ditch being 2 ft.
2. What is the least gradient you could give a tail-race, to work effectively—(*a*) If you were working a gravel face; (*b*) if you were washing sea-beach sand?

SUBJECT Q.—*The Working of Auriferous Gravels by Hydraulic Sluicing, either by elevating or otherwise, including Sluices and Gold-saving Appliances.*

1. Show by sketch a hydraulic-elevating plant, and describe fully its construction.

SUBJECT S.—*A Knowledge of Part V. of "The Mining Act, 1898."*

Oral examination.

FIFTH DAY.—TIME: 5 P.M.

SUBJECT S.—*A Knowledge of Part V. of "The Mining Act, 1898."*

Oral Examination.

1. From what parts of a mine worked from a shaft shall proper and distinct signals be provided?
2. State the parts of a mine that should be securely fenced in or covered.
3. State how explosives should be stored in mine and on surface.
4. What persons are prohibited working in a mine?
5. State how and when a manager is liable to a penalty.
6. What time is appointed for examining safety appliances and gear connected with cages, winding-ropes, buildings, machinery, and shafts, and the record of such examinations?
7. State what is the duty of any person employed in or about a mine before commencing work, and the steps to be taken if anything is found to be unsafe.
8. What steps should a manager take if an accident occurred with injury to a person?

QUESTIONS USED IN THE EXAMINATION OF BATTERY SUPERINTENDENTS FOR CERTIFICATES.

("The Mining Act, 1898.")

FIRST DAY.—TIME: 9 A.M. TO 12 NOON.

[The candidates will not be allowed any books other than logarithm tables during the time they are sitting for examination. They must attempt to answer every question, and all calculations must be shown in detail.]

SUBJECT A.—*The Different Modes of Reducing and Pulverising Ores.*

1. Give your experience in batteries. State when, where, and by whom you were employed.
2. What is the maximum speed that you could work stamps with a drop of 7 in.? Show how you arrive at the result.
3. State how you would place dies in the mortar-box, and at what height above the bottom of screen you would place them when the dies are new, for wet and also for dry crushing, and give your reasons for same.
4. Show by calculation the weight of a stamp whose head and shoe is 21 in. long and 9 in. in diameter, and the stem 14 ft. 6 in. long and 3½ in. in diameter, allowing the tappet to be 140 lb.
5. Require the horse-power necessary to work twenty heads of stamps of 1,000 lb. each, with a drop of 6 in., and making ninety-five drops per minute, including friction of machinery.
6. Show by calculation the diameter of a nozzle you would require for a Pelton wheel to give the necessary power to drive a battery of twenty stamps of 1,000 lb. each, having a drop of 6 in. and making ninety-five drops per minute, including power absorbed by friction, the head of water above nozzle being 140 ft., and allowing the Pelton wheel to give 80 per cent. of the power of the water.
7. If you were erecting a stamp-mill with rock-breakers and ore-feeders, give the different heights from the bottom of the mortar-box to the bottom of the ore-hoppers, the floor where the rock-breakers are placed, and the level of the tramway to empty the ore from the mine into the bin that supplies the ore for the rock-breakers.
8. Describe the different classes of ball-mills used in crushing gold-ores, their capacity, and power required to work them.

SUBJECT B.—*Amalgamating-machines.*

1. In constructing tables covered with copper-plates from the mortar-box, what fall would you give them; and give your reasons for same?
2. Give the speed you work Watson-Denny pans, and the horse-power required to work them; also, the quantity of material they treat per day of twenty-four hours.
3. At what angles would you set berdans? Give the quantity of tailings each berdan would crush per day of twenty-four hours, the quantity of quicksilver you would use in each, the speed you would work them at, and the horse-power required.
4. Describe the different amalgamating-machines you have been accustomed to use, their advantages and disadvantages, the quantity of quicksilver used in each, the speed they were worked at, the quantity of tailings they would treat in twenty-four hours, the percentage of bullion you recovered from the assay value of the tailings.

5. Describe a Wheeler and also a Boss pan, their speed, power required to work them, the quantity of material they treat in a given time, and also the quantity of quicksilver used in each.

FIRST DAY.—TIME: 2 P.M. TO 5 P.M.

SUBJECT D.—*Cyanide, Chlorination, and other Chemical Processes of recovering Gold and Silver from Ores.*

1. Give a sketch of a modern cyanide plant, the dimensions of vats and sumps you would use, and state the different processes that the ore from dry crushing and also from wet crushing goes through from the time it leaves the crushing-battery until the gangue is deposited as a waste product.

2. Describe fully how the bullion is precipitated from a cyanide solution, and the different processes that it goes through, with the fluxes you would use, before it is in a finished state for market.

3. Describe how you would dissolve the cyanide of potassium, and the strength you would make it up to in the dissolving-tank, and by what means you ascertain the percentage of KCN the solution contains.

4. Describe how you can ascertain the strength of solution to be used in the ore you propose to treat.

5. If you dissolved 30 lb. of cyanide of potassium containing 8 per cent. of KCN in 36 cubic feet of water, what percentage of KCN would the solution contain?

6. In using 20 cubic feet of stock solution containing 19 per cent. KCN, how many cubic feet of water would you require to dilute it to 0·2 per cent. solution?

7. If you were using 15 tons of a sump solution containing 0·13 per cent. KCN, require the quantity of a 5 per cent. solution to make it up 0·3 per cent. solution.

8. If you were using 5 tons of a solution containing 10 per cent. KCN, require the quantity of a 0·09 per cent. solution to reduce it to a solution containing 0·7 per cent. KCN.

9. How many tons of dry ore would a vat contain, the diameter of which is 25 ft., and filled to a depth of 3 ft. 10 in.? Also, state the quantity of solution you would use at once in this vat.

10. In the case of a workman showing signs of cyanide poisoning, what remedies would you use, and how would you apply them?

11. Describe the different methods now used for chlorination of gold-ores, and the time that is occupied in treating each charge of ore.

12. Describe the different methods for generating chlorine gas, giving the proportions of the different chemicals used; also, state how it is applied to the chlorination of gold-ores.

13. State the different methods for recovering the gold from a chlorine solution, and the processes it goes through to render it in a marketable condition.

14. If you had pyritous ores, containing a large percentage of gold, state the method you would adopt in treating them; describe fully.

SECOND DAY.—TIME: 9 A.M. TO 12 NOON.

SUBJECT C.—*The Use of Quicksilver, and Methods of using it in connection with the Extraction of Gold and Silver from Ores.*

1. Describe how you know when quicksilver is in a good condition for adhering to gold, state the different impurities found in quicksilver, and the method you would take to remove them.

2. In coating new copper plates with quicksilver, describe the different methods used, their advantages and disadvantages.

3. Give a sketch showing dimensions of an amalgam trap, and state where it is placed in a battery.

4. Describe the different places in a battery where copper plates coated with quicksilver are used, the advantages or disadvantages of same.

5. Describe fully what is meant by a clean-up, and the different methods and processes used to get the bullion ready for assaying, in order to ascertain its average value.

6. How would you remove gold amalgam from copper-plated tables? Also, how would you remove the whole of the gold from copper plates if you were removing the plates from the tables?

SUBJECT E.—*Sampling and Testing of Ores.*

1. Half a hundredweight of lode-stuff is submitted to you. Describe the methods, step by step, that you would follow for its examination with the view of determining its value as an ore for gold, silver, copper, lead, or zinc.

SECOND DAY.—TIME: 2 P.M. TO 5 P.M.

SUBJECT F.—*A Knowledge of Arithmetic and the Method of keeping Battery Accounts.*

1. If ore contained by assay 1 oz. 19 dwt. 12 gr. of gold and 15 oz. 14 dwt. of silver to the ton, what amount would be recovered from 676 tons of ore if the saving by the ordinary process of treatment was 85·0 per cent. of the gold, and 33 per cent. of the silver?

2. The wages in a battery where twenty-five men were employed were £360 per month. There were four different rates of wages, which may be termed A, B, C, and D divisions. There were twelve men in A division, six men in B, four men in C, and three men in the D division. Each man in the B division got seven-eighths of the amount paid to each man in A division. The four men in C got one-half that paid to the six men in B, and the three men in D got five-eighths of the amount paid to the four men in C. How much did each division of men receive?

3. If pure gold is worth £4 4s. per oz. how much would 1,000 oz. of bullion amount to if it contained 52 oz. 4 dwt. silver to every 4 oz. 7 dwt. of gold, allowing the silver to be worth 2s. 5d. per oz.

4. Require the contents in cubic feet of a round piece of timber 78 ft. long, the diameter of which at the bottom end was 22 in. and at the top 14 in.

5. Divide 0·0004 by 63 and extract the square root of the quotient.

SUBJECT G.—*A Knowledge of Part V. of "The Mining Act, 1898."*

Oral.

1. From what parts of a mine worked from a shaft shall proper and distinct signals be provided?

2. State the parts of a mine that should be securely fenced in or covered.

3. State how explosives should be stored in mine and on surface.

4. What persons are prohibited working in a mine?

5. State how and when a manager is liable to a penalty.

6. What time is appointed for examining safety appliances and gear connected with cages, winding-ropes, buildings, machinery, and shafts, and the record of such examinations?

7. State what is the duty of any person employed in or about a mine before commencing work, and the steps to be taken if anything is found to be unsafe.

8. What steps should a manager take if an accident occurred with injury to a person?

QUESTIONS USED IN EXAMINATION OF MINING MANAGERS FOR FIRST-CLASS CERTIFICATES.

("The Coal-mines Act, 1891.")

FIRST DAY.—TIME: 9 A.M. TO 12 NOON.

[Candidates must attempt to answer every question. All calculations to be shown in detail.]

SUBJECT I.—*On Prospecting, Sinking, Tunnelling, and Opening out a Colliery.*

1. Describe fully the indications you would look for in searching for coal in a new field, and generally how you would proceed to prove existence of coal-seams.

2. What preparations are required before starting to bore for coal; and what is the object in putting down deep bores or trial-borings?

3. Describe class of machine you would prefer to use in boring deep holes, and state reasons for preference.

4. Describe fully the requisite preparations to be made before starting to sink a shaft, and the reasons which would guide you in choosing site of shaft to develop new coalfield.

5. What appliances should be adopted to protect men working in a shaft in course of sinking?

6. What records are necessary to be kept with reference to strata passed through in sinking a shaft?

7. In starting sinking operations for shaft from which it is intended to wind 500 tons daily—depth, 300 yards—say how you would decide diameter of shaft.

8. Describe fully the means you would adopt to ventilate a shaft in course of sinking.

FIRST DAY.—TIME: 2 P.M. TO 5 P.M.

SUBJECT II.—*On Working Coal and Timbering underground.*

1. Describe briefly the various systems of working coal with which you are acquainted, and state where experience gained.

2. What conditions would guide you in deciding which of two shafts should be the upcast and downcast respectively?

3. What are the advantages (if any) of the longwall system of coal-working?

4. Assume seam 6 ft. thick, with soft floor and moderately hard roof, at depth of 300 yards, dipping 1 in 5, and say how you would work same.

5. What precaution should be taken to reduce danger from coal-dust in fiery mines?

6. In mine with an inclination of 25 degrees, how would you set props to support roof?

7. Give a short description of a good form of brick arching for a main road with double line of rails.

8. Describe shortly the operation of drawing props and chocks, and precautions which should be taken to prevent accidents during the work.

SECOND DAY.—TIME: 9 A.M. TO 12 NOON.

SUBJECT III.—*On the Gases of Mines, Spontaneous Combustion, and Ventilation.*

1. What do you understand is meant by the term "noxious gases"? Describe.
2. Name the several gases met with in coal-mines, and state fully the precautions you would adopt to render them harmless to life.
3. What are the special and general duties of a fireman at a coal-mine?
4. In measuring velocity of air by anemometer, would you be satisfied with a measurement at one point? If not, why so?
5. A fan passes 5,000 cubic feet of air per minute with a water-gauge of 1·25 in.: find horse-power so represented.
6. If 20,000 cubic feet of air per minute passes along an airway of 40 ft. area which has a total rubbing-surface of 40,000 square feet, what water-gauge would you expect?
7. What is the meaning of the term "motive column" as applied to ventilation?
8. How much has the ventilating-pressure to be increased to double the quantity of air?
9. How would you lay off the workings for a seam of coal known to be liable to spontaneous combustion?

SECOND DAY.—TIME: 2 P.M. TO 5 P.M.

SUBJECT IV.—*On dealing with Old Workings and other Sources of Danger.*

1. What precautions are necessary to be observed in driving headings toward old workings?
2. What are man-holes, and when are they usually made?
3. What precautions must be taken with regard to explosives in coal-mines?
4. Describe briefly the operation of blasting in a coal-mine when ordinary blasting-powder in use, and danger to be anticipated from blown-out shot.
5. Give your experience, if any, in use of electricity in connection with blasting operations, and state when, in your opinion, it should be used in preference to the ordinary system of blasting by fuse.
6. Why is coal-dust to be regarded as explosive under certain conditions? State what the conditions are.
7. What methods are in use or have been proposed for breaking down coal without use of gunpowder?

THIRD DAY.—TIME: 9 A.M. TO 12 NOON.

SUBJECT V.—*On Steam Boilers and Engines used about Mines.*

1. Describe and give sketch of what you consider a good class of steam-boiler for colliery use; show position of fittings, and the uses for which they are applied.
2. Describe the class of winding-engine you would apply to raise, say, 500 tons daily from a depth of 200 yards, giving size of rope and drum.
3. Describe class of engine customary for driving a fan, and assume one such, 18 in. cylinder (fix own length of stroke); speed of piston, 200 ft. per minute; initial steam-pressure, 100 lb. per square inch; cut off at $\frac{2}{3}$ stroke: required, average steam-pressure and horse-power.
4. What would be the advantage of electrical transmission of power in mining operations, and what special drawbacks prevent its general use?
5. What is meant by a factor of safety, and what factor would you allow for colliery winding-ropes?
6. Describe the special precautions you would adopt in connection with coal-mining plant in order to prevent accidents arising from its use.
7. Describe arrangements for banking at top and bottom of a winding-shaft when it is desired to occupy as short a time as possible for each banking and winding.

THIRD DAY.—TIME: 2 P.M. TO 5 P.M.

SUBJECT VI.—*On Mine Drainage and Haulage, and Appliances for Same.*

1. Describe the class of pump you would apply in sinking a shaft, say, 100 yards deep; quantity of water, 250 gallons per minute.
2. Describe a pump suitable for the drainage of dip-workings (quantity of water, 200 gallons per minute, passed through a line of pipes 1,500 ft. long to a vertical height of 300 ft.), and state what power you would adopt to work the pump, and the horse-power required.
3. Give sketch, with figured dimensions, and name the working-parts, of—
   (*a.*) 15-in.-diameter bucket lift.
   (*b.*) 15-in.-diameter plunger lift.
4. Describe usual methods of transmitting power in haulage arrangements, and name system you have experience of.
5. Describe fully the method of conveying coal by endless rope, and show by sketch means of keeping tension on rope, and means of securing tubs thereto.
6. Assume 50 tons hourly to be conveyed at the rate of 2 miles an hour by endless rope over a distance of 2,000 yards, the average grade being 1 in 10 against the load; each tub weighs 5 cwt., and load 10 cwt.; allowing $\frac{1}{28}$ for friction of tubs, and 50 per cent. for general resistance of machinery; the rope weighs 8,500 lb.: find horse-power required.

7. What is the special advantage of friction clutches on haulage plant?
8. Describe what, in your opinion, is the most efficient and convenient method of signalling—
(*a.*) On haulage-roads.
(*b.*) In shafts.

FOURTH DAY.—TIME: 9 A.M. TO 12 NOON.

SUBJECT VII.—*On Geology, Surveying, and Making Plans.*

1. How is geology useful in coal-mining?
2. Describe the general structure of a coal-field?
3. What changes in quality and regularity of position are found in working coal-seams?
4. Describe conditions under which coal is found in any New Zealand colliery with which you have been connected, and show by sketches what is meant by—
(*a.*) Dykes;
(*b.*) Faults, downthrows or upthrows;
(*c.*) Overlap faults.
5. Candidate must produce plan showing survey of a portion of a mine surveyed by himself, and showing the connection between surface and underground work, the boundaries of surface to be not less than 20 acres, traverse to be calculated and field-book shown.
6. Assume line A B, N. 50° E., 500 links;
B C, N. 25° E., 300 "
C D, N. 20° W., 600 "
D E, S. 30° W., 500 "
required, bearing and distance of line to connect E to A; line to be calculated.
7. Explain use of a vernier scale.
8. Describe difference between loose- and fast-needle surveying; and what are the special advantages of the latter?

FOURTH DAY.—TIME: 2 P.M. TO 5 P.M.

SUBJECT VIII.—*Arithmetic, and a Knowledge of "The Coal-mines Act, 1891."*

1. A mine worked on the pillar-and-stall system: the pillars are 25 yards long and 15 yards wide, bords 6 yards wide, and headings 4 yards: what percentage of coal is gotten in the first working?
2. In a seam having an average thickness of 6 ft. and area of 1,000 acres, the specific gravity of the coal being 1 26, how many tons of coal should be got out of the seam, allowing what you consider a reasonable percentage of loss in working?
3. Suppose you have two mines dipping 1 in 3, and 60 yards distance between them in the shaft, what length would a tunnel be, rising 1 in 5, to connect the two seams?
4. Give the requirements of the Coal-mines Act regarding winding-drums and steam-boiler fittings.
5. What plans are required to be kept at a colliery? Describe provisions.
6. How would you proceed to examine a working-place for gas so as to comply with "The Coal-mines Act, 1891"?
7. Name the various positions to which officers may be appointed under the rules applicable to coal-mines, and in compliance with the Act.
8. Give provisions of Act relating to (*a*) signalling, (*b*) ventilation, (*c*) explosives and blasting, (*d*) refuge-places, (*e*) machinery.

QUESTIONS USED IN EXAMINATION OF MINING MANAGERS FOR SECOND-CLASS CERTIFICATES.

("The Coal-mines Act, 1891.")

FIRST DAY.—TIME: 9 A.M. TO 12 NOON.

[Candidates must attempt to answer every question. All calculations to be shown in detail.]

SUBJECT I.—*On Prospecting, Shaft-sinking, Tunnelling, and Opening out a Colliery.*

1. Describe how you would proceed in starting to sink a shaft through, say, 150 ft. of rather loose water-bearing strata. Show—
(*a.*) How you would secure the ground until harder strata entered upon;
(*b.*) How you would deal with the water—150 gallons a minute—temporarily;
(*c.*) Assuming no water in harder rocks, what steps you would take to exclude the surface-water from the shaft.
2. In sinking a circular shaft requiring to be walled with brickwork, how would you proceed? Describe—
(*a.*) Scaffolding, how worked.
(*b.*) Bricking curb, and how to fix same.
(*c.*) Method of joining one length of bricking to the next length above.

3. It is proposed to open a mine by means of a dip incline on a seam of coal 5 ft. thick, roof requiring to be timbered, inclination 1 in 5, length 500 yards. How would you carry on the works, providing for—

(*a.*) Seventy-five gallons of water per minute, and material excavated;

(*b.*) Ventilating tunnel.

And show by sketch how timber set to secure roof. Tunnel to be 10 ft. wide and 6 ft. high inside timbers.

FIRST DAY.—TIME: 2 P.M. TO 5 P.M.

SUBJECT II.—*On Working Coal, and Timbering Underground.*

1. Show by sketch how you would construct an overcast for ventilation purposes, giving figured dimensions of an overcast suitable for a current of 8,000 cubic feet per minute.

2. What is the order of operation in getting coal when the seam requires blasting? Describe fully, and mention precautions necessary in carrying on the operations.

3. State condition under which coal-dust in mines becomes dangerous as a source of explosion.

4. How would you secure a "longwall-face" where roof tender and floor soft; seam 5 ft. thick, inclination 1 in 8.

SECOND DAY.—TIME: 9 A.M. TO 12 NOON.

SUBJECT III.—*On Gases of Mines, Spontaneous Combustion, and Ventilation.*

1. Name the several gases met with in coal-mines, and the steps you would take to render them harmless to life.

2. Give your opinion as to relative merits of fan and furnace ventilation, and indicate the conditions under which the fan is preferable.

3. What steps would you take in dealing with a gob-fire, and generally what precautions should be taken to prevent such?

SECOND DAY.—TIME: 2 P.M. TO 5 P.M.

SUBJECT IV.—*On dealing with Old Workings and other Sources of Danger.*

1. In starting a pair of headings to connect old workings known to contain water, what precaution would you adopt, and what special appliances would you make use of?

2. What are the dangers to be feared from blown-out shots in coal-mines, and how are such to be prevented?

3. Describe what in your opinion is a suitable safety-lamp.

4. Describe how you would test a working-place for firedamp; and what means would you take to clear it if firedamp present?

THIRD DAY.—TIME: 9 A.M. TO 12 NOON.

SUBJECT V.—*On Mine Drainage and Haulage, and Appliances for Same.*

1. Describe what you consider a good class of pump for raising water from dip workings, and what motive you would apply to work such pumps.

2. Describe a lifting set of pumps, and say how much water can be raised per minute by such a pump 12 in. diameter, 6 ft. stroke, making 12 strokes per minute, and allowing a loss of 10 per cent.

3. Under what condition would you apply a siphon in a mine?

4. Describe tail-rope and endless-rope haulage systems. Give conditions under which you would adopt one or other of these systems.

THIRD DAY.—TIME: 2 P.M. TO 5 P.M.

SUBJECT VI.—*Arithmetic, and a Knowledge of "The Coal-mines Act, 1891."*

1. What quantity of material will be excavated for a site for new shaft which measures 50 ft. in circumference? Give answer in cubic yards per fathom.

2. Assume output of mine to be 1,000 tons weekly,—

500 tons screened coal, cost 3s. 6½d. per ton;
100 " " nuts, " 2s. 1½d. "
250 " unscreened " " 1s. 9¾d. "
150 " waste:

show average cost per ton percentage of respective kinds, and the percentage of loss.

3. Describe the various duties devolving on the underground manager and his subordinate officers under Coal-mines Act.

4. What are the provisions as to refuge-holes? Describe these, and where placed.

5. What books are required to be kept at a mine, and who is responsible, under the Act, for reports and notices?

6. What are the general rules with respect to explosives in coal-mines?

[All answers relative to Act to be given in writing.]

MODERN MINE-HAULAGE PRACTICE.

[Paper read before the Engineers' Club of Philadelphia on the 6th May, 1899, by Harry K. Myers.]

To the engineer of the present day, in whose hands is the success or failure of the various mining operations, there are many forms of daily expense which he is desirous of curtailing; yet, on account of existing conditions, it is a serious problem as to the method most suitable for his special condition.

One of the vital points in the production of any mineral is the transportation of the same from the face of the workings to the point of preparation, and it is almost impossible to conceive the vast amount of money expended in the various mines simply for underground haulage and maintenance of track. Previous to the past decade the question of economy was not so large a factor in the financial operation of mines, but at the present time competition in all lines is so great that the ruling prices are those at which the most advantageous mines can market their product with a fair margin of profit. In mines where natural conditions are not so favourable it is a matter of vital importance to devise or adopt methods whereby the product can be marketed at the going prices with a substantial profit. This is more especially the case in the mining of bituminous coal, with which the ruling profit is very small, and the cost of mine-transportation quite a large percentage of the price realised. Under a few special conditions it is possible to have animal-power more economic than mechanic, but with the recent improvements in the latter such favourable conditions have become exceedingly few.

In this paper it is not the intention to go into special details of the construction of the different machines in mine-haulage, but rather to point out the most modern methods as applied in general to the coal-mines of this country. Particular attention is given to coal-mines for the reason that this tonnage is the maximum of any mineral product from underneath the surface, and on account of the low specific gravity it necessarily follows that the area worked over is a maximum, and, consequently, the power necessary for its transportation is vastly greater than for any other.

To persons unaccustomed to underground workings and the rapidity with which the various gangways are advanced it is almost impossible to conceive the vastness of this subject; but when one considers that in one mine alone, with which the writer is familiar, there now exist 130 miles of track laid with iron and steel rails, and in the operation of this mine up to the present time there has existed 500 miles of such track on headings and air-courses and three times as much in rooms, making a total of 2,000 miles of road-construction which has been in this mine, of which about one-fourth now remains—if one simply makes an estimate of the track laid during the past year, based on a 6 ft. seam of coal, it is found that in the production of 200,000,000 tons it required 2,000 miles of track on headings and 5,000 miles in rooms. It may be said that all of this track was at such grades that it could be operated by some sort of traction, and, with such an amount of extensions each year with a total of 30,000 miles in operation, there is no reason why this class of work should not receive the full attention of the engineer and great economies result therefrom. Much has been written about preliminary, location, construction, maintenance of way, and transportation on steam surface-roads, but little has been said of the underground systems.

At the present time there are fully 400,000,000 tons of different minerals produced annually over a total of 50,000 miles of mine-track, with an average haul of one mile per ton at a cost of 15 cents. In the transportation of this material it requires 100,000 mules, whose average life is four years each. To drive and maintain each mule will cost $600 annually, or a total of $60,000,000 annually for mine-transportation. With such an amount involved, it would appear to be a matter of a short time when animal-power would be a thing of the past and mechanic haulage universally adopted.

Of the various forms of haulage—viz., rope, steam-locomotive, compressed air, and electric—the first two have been used for a number of years. The wire-rope haul has been rather efficient, especially in straight headings and where the grades are heavy and against loads, but in the various attempts to use them in crooked gangways the cost of renewals has been very great. The mining type of steam-locomotive has been used considerably, but with the perfecting of mining-laws and the generally poor results obtained they are fast going out of use. The depression of business during the past year caused mining companies to examine modern methods, that they might secure a saving in this item of cost.

About twenty years ago the question of compressed-air haulage in mines came up for consideration, but with the low pressures then advocated the range of the locomotive was such that very few plants were installed; yet in that form it was a great improvement over the original tandem compound—viz., a string team of mules. The only disadvantage in compressed-air haulage is the size of the storage-tanks. As built at the present day for ordinary heavy work, they have the following dimensions: Height, 5 ft. to 5 ft. 6 in.; width, 6 ft. to 7 ft.; length, 16 ft. to 22 ft. During the past ten years much discussion has arisen as to the merits of the forms of compound locomotives, but not until about two years ago was any attempt made to apply this principle to pneumatic locomotives, when the Baldwin Locomotive-works agreed to build for the Philadelphia and Reading Coal and Iron Company a Vauclain compressed-air locomotive, with the following dimensions: Diameter of high-pressure cylinder, 5 in.; diameter of low-pressure cylinder, 8 in.; length of stroke, 12 in.; diameter of drivers, 24 in.; wheel-base, 54 in.; weight, 22,000 lb.; capacity of storage-tanks, 160 cubic feet; line-pressure, 800 lb.; tank-pressure, 600 lb.; working-pressure, 200 lb. It was the intention to have this locomotive do the work of fourteen mules, and after a series of delays the plant was completed and the locomotive was thoroughly tested, much to the satisfaction of both builder and purchaser. After a most thorough trial of eighteen months two other plants were ordered, and at the present time another large coal company is having two similar plants installed.

The economy of the compound over the simple expansion of this type is, first, that the full expansive effect of the air is realised; second, on account of the large combined cylinder-surface, new energy is imparted to the air from the surrounding atmosphere; and, third, in the practical use of the locomotive.

In making the calculations for air-consumption the various cut-offs are considered, while in the use of the locomotive the engineer invariably cuts off later in the stroke than necessary, and hence exhausts at high pressure with simple cylinders; but with compound this exhaust is caught in the low-pressure cylinder and utilised. The best practical example of this saving, which is fully 50 per cent., is shown in the use of compressors of same size and make. Where the simple cylinders are used it is impossible to keep a supply of air, whereas with the compound the compressor is running half-speed most of the time and the pipe at maximum pressure. On account of the high pressure carried many people are fearful of the results from explosions, and go so far as to say that the factor of safety with such pressures should be greater than with low ones, but this is not the correct idea. These pressures are a maximum which it is difficult to maintain and almost impossible to exceed, hence the possibility for explosion is scarcely to be considered; while in low pressures it is easy to excel and hence increase the possibility of explosion. It is therefore considered good practice to use a factor of safety of three in designing the storage-tanks. In the compression of air it is impossible to get the ideal; hence in compressing 100 cubic feet of free air we get practically 3 cubic feet at 750 lb., instead of 2—the theoretic amount. If this air is expanded adiabatically, we will have 75 ft. free air, or a loss of 25 per cent. It is customary to base calculations on adiabatic compression and expansion, but in the use of high pressures the errors are such that we must work with closer values if we desire reliable results.

In order to show the working of a Vauclain compound air-locomotive we will refer to the records taken at the Alaska Colliery of the Philadelphia and Reading Coal and Iron Company: On the 20th October, 1897, the average of twelve trips was twenty-six empty cars, weighing 75,000 lb., hauled up an average grade of 1·4 per cent., 2,400 ft. long, with an average indicated horse-power of 49·4 and an air-consumption of 114 cubic feet at 200 lb. pressure. In practice this would require 9 cubic feet at 750 lb., or 300 cubic feet free air, and to compress same would require approximately 95-horse power, thus showing an efficiency of over 50 per cent. for the entire system. Had the air been compressed to 200 lb. it would have only required 57-horse power to do the compressing, and the efficiency would have been 87 per cent.

In the use of compressed air in Paris it has been determined that it required 11 ft. of free air heated and 115 ft. cold to produce 1-horse power. In the work cited above it required about 6 ft. free air per indicated horse-power, and to transport 1-ton cars and lading one mile on level track, with a car-resistance of 1 per cent., 23 cubic feet free air. The air used at this point is filtered through water in order to remove all dust, and comes to the three-stage Norwalk compressor thoroughly saturated with moisture; yet this moisture does not assert itself until the working-pressure is reduced to 120 lb., when there is trouble in freezing.

For gassy mines this is the only form of haulage, and, since it is necessary to have sufficient storage-capacity to charge the locomotive almost instantaneously, it is customary to extend the pipe-line sufficiently far into the mine so that it may act as a reservoir, and at the same time afford charging-stations at convenient points or for future demands.

About the time of the introduction of electricity into street-car service it became a question for discussion among the mining people as to its practicability for their use. In the early days the failures were numerous, due principally to the inability to fully understand the various freaks of motors and kindred troubles. The system in general was looked on with suspicion, and considered entirely theoretic, and, with the rough usage of mine machinery, considered entirely of too dainty a nature for practical use. The dangers arising from its use were also detrimental to its installation, but this has all passed away to such an extent that bare wires are now used for feed-wires. On account of the methods for supporting these wires it often happens that they fall down, and cause serious accidents to mules. In the use of 250-volt current it is found that simple contact does not kill the mule, but if he falls on it he is certainly killed.

Of the many electric haulages installed during the past five years very few of them have been of 500 volts, due principally to the fear of the high tension; yet the number of accidents from this voltage is no greater proportionally than for the low, and when it is considered that in the low the amount of feed-wire is greatly increased the chance for fallen wires and danger from contact are also increased.

The numerous accidents to mules coming in contact with these wires raised a demand for some sort of a system whereby the animal will become an unnecessary evil in the operation of a mine. To construct a bonded track and stretch a trolly-wire to the face of all workings would be too expensive for general mine practice, and in consequence it is the custom in some mines to use a small mine-wagon, and have the miner push it to and fro from face to parting, from which place it is taken with the locomotive. In order to eliminate the mule from the mine and haul from the face of all workings, a combined storage and trolly locomotive has been devised, whereby the heavy work on headings is done from trolly, and while so running the attached battery, which is carried in circuit, absorbs sufficient current to do the necessary room-work. Such a locomotive, the only one of its class, was built by the Baldwin-Westinghouse combination for the South-west Virginia Improvement Company, having the following dimensions: Gauge, 36 in.; width over all, 42 in.; height, including battery-box, 44 in.; length, 124 in.; weight, including battery, 9,000 lb.; electric equipment, two 10-horse-power motors; rheostatic controller. This locomotive was designed to haul on the level one loaded car weighing 9,000 lb. on storage, and was accordingly equipped with 90 5-D. cells, and having mounted therewith a special battery circuit-breaker, &c.

After the locomotive was built the mine-manager changed his plans, and concluded to try it in a part of the mine where the battery would be required to handle loaded cars up a 4-per-cent.

grade and empties up 8-per-cent. In addition, the trolly-line was an extension of the feed-line for some ten or twelve mining-machines, in consequence of which the voltage varied from 110 to 200, and the battery would either feed back into the line or throw the circuit-breaker. In order to prevent the latter it was so adjusted that it would not fly out, and the battery was virtually short-circuited a large number of times each day without any bad effect. With this condition of affairs it was impossible to hold sufficient current in the battery to do the desired amount of room-work, and it became necessary to stop a total of about thirty minutes each day for renewals. It must be remembered that this work was under the supervision of a mine-foreman unacquainted with storage-batteries. Having gone to such extremes in the use of this locomotive, it was suggested that a new and independent feed-line would be a great improvement; it was installed with marvellous results. The voltage became constant, and the battery often discharged for a short time at three times its rated capacity; yet the work has been ideal, and after almost three months' service there is no appreciable wear on the battery. It produces a tractive effort up to the point of adhesion of the locomotive when working on storage, and the regular work is to take seventeen empties weighing 60,000 lb., including locomotive, from side-track up a short 1-per-cent. grade, then down a 4-per-cent. to a level, from which place it starts to distribute in rooms having a maximum of 8 per cent. in favour of loads. After distribution it proceeds to collect the loads in trips of two cars each, on account of the 4-per-cent. grade against loads on heading, and deliver them to the side-track while working on trolly. In this manner this one locomotive is capable of delivering to this side-track, over an average round-trip haul of 4,000 ft., two hundred loaded wagons daily direct from face of working, which is the work, under existing conditions, of twelve mules and eight drivers. It is the intention to place a night force, and if sufficiently large the saving will be the care of twenty-four mules and time of twelve men, or an amount equal to $8,000 annually.

This same company has placed an order for six more of the same class of locomotives, and are considering the matter of constructing heavier ones of the same kind to take the place of steam-locomotives now in use, but which are very injurious to both the ventilation of the mine and the timber-work.

In general, it costs from 6 to 10 cents per ton to deliver coal from face of workings to shaft, slope, or tipple, where the haul is one mile, and the tracks approximately level; yet I have in mind three mines which at present haul from parting with the trolly system, the miner delivering from face of room, making an average round trip of 9,000 ft., at a total cost of 1 cent per ton. These mines have never had a mule in them, and it would be almost an impossibility to introduce them, for the reason that the seam is of such thickness that the clearance between tie and roof is only about 4 ft.

Since the advent of the electric mining-locomotive there has been a change in the mine-wagons universally used. Formerly it was customary to find as much as 60 lb. per ton car-resistance on the level, while at present it is as low as 15 lb.

In dimensioning mining-locomotives it is customary to make the weight from six to eight times the necessary tractive effort dependent entirely on the nature of the work. If the work is constant and a maximum, then the weight would be only six times the torque of the motors, while if the work is intermittent, with a short-time maximum tractive effort, then the factor would be eight. For maximum continuous work it is necessary to have a grade such that the efforts to haul the same number of empty wagons as loaded are equal. With the car-resistance considered 1 per cent., and the loaded cars weighing three times as much as the empties, this is found to be one-half of 1 per cent. The most critical point in the designing of mining-locomotives is to make the limiting dimensions a minimum. The demands for various dimensions are wonderful. The headings in mines are never of more generous proportions than really necessary, and all clearances a minimum. The minimum dimensions for mining-locomotives are as small as 2 ft. for wheel-base, 8 ft. for length over all, and 3 ft. width. Scarcely two orders carry the same dimensions, and it is impossible to have any kind of a standard. In consequence of this it is necessary to have a great variety of motors suitable for gauges as narrow as 18 in., and for wheels as small as 20 in. in diameter. With such a variety, it becomes possible to construct a locomotive weighing 40,000 lb. on 3 ft. gauge, having the width over all 62 in., height 35 in., and length 12 ft. In such construction it is necessary to have the most modern form of motors, and the most rigid mechanic construction.

The motors now used are of the best possible construction and efficiency. They are of the slow-speed street-car type, six to eight miles per hour, winding, and range in size from 4- to 50-horse power. It is customary to use the rheostatic type of controller for mining-locomotives on account of its small dimensions and apparent efficiency for this class of work, but it is doubtless but a short time until a very compact form of series-parallel type will be devised. On account of the use of this rheostatic controller it becomes necessary to provide for large diverter-capacity, and, since the locomotive is designed for the maximum tractive effort, it is hardly ever possible to run without resistance, and hence a large amount of current must be dispersed with the consequent heating.

The demands for mining-locomotives come from all quarters of the globe, thus showing that engineers in every section are awake to the fact that modern mechanic appliances are an absolute necessity in the art of mining.

In order that a comparison may be made between a mule and a locomotive, I have deduced from practical observation that the former as well as the latter can produce a tractive effort of one-fifth its weight for a maximum, and one-seventh for regular work, thus showing that the mule is a very efficient machine so far as effort is concerned, but very deficient as to speed.

In conclusion, I would say that it is my belief that in the very near future compressed-air and electric locomotives will as thoroughly displace the mule in mines as they have the horse in street-

car service; and, although I have no desire to organize a crusade against this noble servitor of man, yet the demands of the investor for increased capacity with decreased cost are such that there is no other alternative than to accept the inevitable and adopt modern methods, and install the most modern machinery.

SIMULTANEOUSLY DEEPENING AND LINING A BELGIAN COLLIERY-SHAFT.*

At Ougrée Colliery, in Belgium, the air-shaft to be deepened 20 m. (22 yards) from the winding-shaft has a clear diameter of 3 m. (10 ft.), and it had to be sunk from the level of 480 m. (262 fathoms) to 580 m. (317 fathoms)—*i.e.*, for a depth of 100 m. (328 ft.)—and the measures to be passed through were perfectly well known from the sinking of the winding-shaft, which had preceded the air-shaft. As regards the first 50 m. (164 ft.) the measures were regular and tolerably compact; but as to the last 50 m., although of about the same resistance, the measures were more disturbed. In the sinking of the second portion of the winding-shaft they caused many difficulties; and when the sandstones were reached feeders showed themselves, while the dip of the strata varied between 50° and 75°.

The first 50 m. were sunk by the ordinary method—*i.e.*, with a temporary lining, followed up by a definite brickwork lining; but as regards the last 50 m. a new method was adopted, dispensing with a temporary lining, by putting in a definite monolithic lining at the same time that the sinking was proceeded with. As regards the excavation, the sterile rock, consisting of shale and sandstone, had practically the same thickness in each of the two 50 m. passes, so that an exact comparison could be made of the two methods.

All sinking operations in the coal-measures comprise the sinking proper and the lining, while the former generally comprises excavation of the rock, clearing away the matters excavated, keeping up the sides, taking off the water, the establishment of ventilation, and the arrangements necessary for taking down and bringing up the workmen. All these operations were the same in each of the two passes; but for the first, in which the definite lining was of masonry, a combined platform and template was employed, made of two plate-iron concentric cylinders, which permitted of placing the masons on a floor, also of plate-iron, situated practically in the middle of the height of the annular space, and to effect the service of the materials for the lower level by the central space, in which manner all cause of accident was avoided that might proceed from the fall of bricks or parts of the temporary lining while it was being dismounted. As the brickwork advanced the platform was drawn up by blocks and falls from above, the iron frame and the timbers being taken out when necessary and let down to the lowest level reached.

A brickwork lining in the coal-measures is generally considered the best, although it costs a great deal, while requiring much time and care; but it is not watertight, and requires the temporary lining with all its disadvantages, without counting the accidents that may arise during its erection, or while it is being taken down. This is so true that some coal-masters content themselves with this temporary lining, merely putting in planks close together behind the iron frames for constituting a definite lining. Now, if means could be found for economically and simultaneously putting in a definite monolithic lining as good as one of brickwork, if not better, without having to employ a temporary lining, and if at the same time, for effecting this monolithic lining, no more time, or even less time, be spent than in the temporary lining, it is evident that a considerable step in advance will be made.

There is simultaneity of sinking a shaft and putting in the definite lining when the latter is effected immediately after the sinking, but when, in passing from one of these operations to the other, recourse is had to a temporary lining there is no longer simultaneity. Starting from this principle, an attempt was made for the second 50 m. pass to obtain simultaneity between the sinking and the definite lining, which led to the seeking after a new method, and the formation of a first project. It was decided in principle to establish directly, after sinking for a few metres, a definite iron framework, well fastened to the inside of the shaft, to immediately fill up with masonry the space between the frames, and to continue in this manner by small successive passes. These frames were to consist of rolled joists bent and fished, being kept a metre apart by uprights of same section, the web of the bent joists being placed horizontally for opposing a greater resistance to the thrust of the measures, and the distance between the flanges would have been sufficient to receive half a brick, so as to permit of lining for this thickness the space between two frames.

There was the certainty that this lining would afford a thorough solution of the problem, perfectly standing the thrust, which would be limited to a small radius; and then this very strong lining might easily withstand pressure, whereas if it were due to working being brought too near the shaft no lining would stand. A difficulty was, however, experienced in getting the joists bent with the web horizontal, which led to this first project being abandoned.

Method adopted.

Matters had reached this point when M. Armand Mahiel's work on concrete construction fell into the author's hands. Works in concrete have nearly always given good results, and during the last few years their vogue has greatly extended; and why should not concrete be tried for solving one of the most important problems connected with mining? Accordingly, it was decided to sink the second 50 m. pass, while at the same time putting in a lining of cement concrete, its low cost, its tightness, the absence of joints, and its great adhesion to the inside of the shaft appearing at once

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* From a communication to the Liége section of the Association des Ingénieurs sortis de l'Ecole de Liége, by M. Julien Linet, manager of the Ougrée Colliery, Belgium.

to recommend such an application. The method consists in putting down the shaft for a few metres without having to keep up the sides, and in continuing this work by small passes without any stoppage, as shown in vertical section by Fig. 1. A depth is sunk of three or four metres (mean 11½ ft.), or even more, according to the measures, without any lining whatever; and then the first length, or section, of the movable centring is laid perfectly level from 30 cm. to 50 cm. (mean 1 ft. 7 in.) from the bottom, on a light collar of planks resting on three timbers, which divide the shaft into the ladder compartment and that for working the kibbles.

The movable centring (shown by Figs. 2 and 3), 1 m. (3 ft. 3⅜ in.) high and 3 m. (10 ft.) in outside diameter, is formed of five segments connected by simple cleats with pins; and the segments of each centring are formed of timbers with radial joints nailed to horizontal joists 4 cm. (16 in.) thick, following the internal contour of the concrete lining. For facilitating the putting-up and taking-down, a simple bevelled sector that can be taken up by hand is intercalated between the first and last segment; and this construction, entirely of deal, is very light and easily manipulated.

Landing.—Between the movable centring and the inside of the shaft concrete is run in; and for this work, as the taking-up of the spoil often alternates with letting down the concrete, the landing is formed of two floors, each having two flaps for allowing the kibbles to pass; and, while the lower floor is fixed, half the upper can turn up on hinges. For the spoil the upper floor is used, so as to permit of tipping the stones directly into a tub; and for letting down the concrete the upper floor is turned up on its hinges, the loading being thus effected from the lower level, thus saving loss of time.

Concreting.—The concrete is let down in the kibbles that serve for sending up the spoil, the winch drawing them up and setting them down on a simple floor laid on the joists of the centring and tipping them directly into the angular space in layers of 30 cm. to 35 cm. (mean 1 ft. 1 in.). Each layer is punned rapidly in as vertical a direction as possible, but with slight blows for driving off the air and uniformly consolidating the concrete, this work being performed as quickly as possible for preventing joints from forming.

When the first metre—say, yard—is thus concreted a second centring is put in, and the work proceeds in the manner just described, but for rendering it easier to strike the centring the carrying-timbers are placed in notches in the lower frame. At the last centring there remains a space of about 15 cm. (6 in.), which is filled very quickly and easily with the trowel; and in this case the punning must be made horizontally. The men soon become accustomed to putting up and striking the centring, which they perform very quickly; but the first length, or section, of 1 m. (3 ft. 3⅜ in.), requires to be placed perfectly level. When this small pass has been concreted the excavation of another is begun after the joists have been removed, which is effected without causing difficulty or damage, the concrete being already hard as a rock; and each length or section of concrete perfectly filling up the irregularities caused by blasting forms one piece with the shaft-sides, so that it remains suspended, as it were, without the slightest danger.

The preparation of the concrete is effected on the spot and in the following manner: On a perfectly level space is spread a 25 cm. (10 in.) layer of broken stone well washed, and the concrete mortar is poured over them, the two being thoroughly mixed by means of appropriate tools.

Nature of the Lining.—This monolithic lining is thus produced by intimately mixing rock materials with mortar made from slag cement, the skeleton thus consisting of the slag of forge pig broken into irregular pieces of 3 to 5 cm. (mean 1½ in.) gauge (or, better still, and more frequently, from the sandstone obtained in driving crosscuts), and the mortar of one part by weight of cement to two parts of granulated slag, this representing in volume one of cement to four of slag. Slag cement was used because, while being better than natural and just as good as artificial cements, it is from 50 to 100 per cent. cheaper, and a mean of five samples tested at the Government station, Mechlin, gave favourable results. The concrete showed a resistance to tensile strain of 20 kilogs. per square centimetre (284 lb. per square inch) after remaining under water for a week; and the resistance to crushing-strain may be taken as ten times greater than that to tensile strain, while the resistances obtained after a month practically correspond with those obtained after a week, with the addition of 15 per cent.

Composition of the Concrete.—One condition was imperative in the present case: the monolithic lining must prevent the passage of water, so that all the spaces had to be perfectly filled up by the cement; and the practice in such a case is to take two parts of cement mortar to three parts of broken stone, this giving, for 2 tons of concrete, 1 ton of broken stone, 0·25 ton of cement, and 0·65 ton of granulated slag.

Resistance of the Concrete.—As regards the resistance proper of concrete, actual tests on tensile and especially crushing strain (which is the most important) are still wanting; but it may be concluded from official tests carried out at the Liége Cannon Foundry that the concrete employed in the case under notice will afford a resistance to crushing-strain of at least 300 kilog. per square centimetre (4,267 lb. per square inch). If it be considered that the advice thus given to only use good bricks up to a mean resistance of 12 kilogs. per square centimetre (171 lb. per square inch), it may be asserted that for lining shafts concrete is, with far less thickness, preferable to bricks, and that important works of lining, and also vertical and horizontal stoppings that are impossible—or, at any rate, difficult—with ordinary materials, may be carried out in concrete with a certainty of success.

In the present case the question should be asked whether the thickness of 25 cm. (10 in.) given to the lining was sufficient to withstand, not so much strain as a brick lining of double the thickness, which was certain, but also a feeder which, in the case of the winding-shaft, showed itself at a depth of about 25 m. (14 fathoms).

If the principles of the strength of casings or coverings be applied to this case, the limit of tension answering to a given thickness, c, will be $T = 1 + \frac{2n}{c}\frac{R^1 2}{R^1 + R} = 19{\cdot}8$ kilog. per square centi-

SIMULTANEOUSLY DEEPENING & LINING A COLLIERY SHAFT.

Fig. 1.

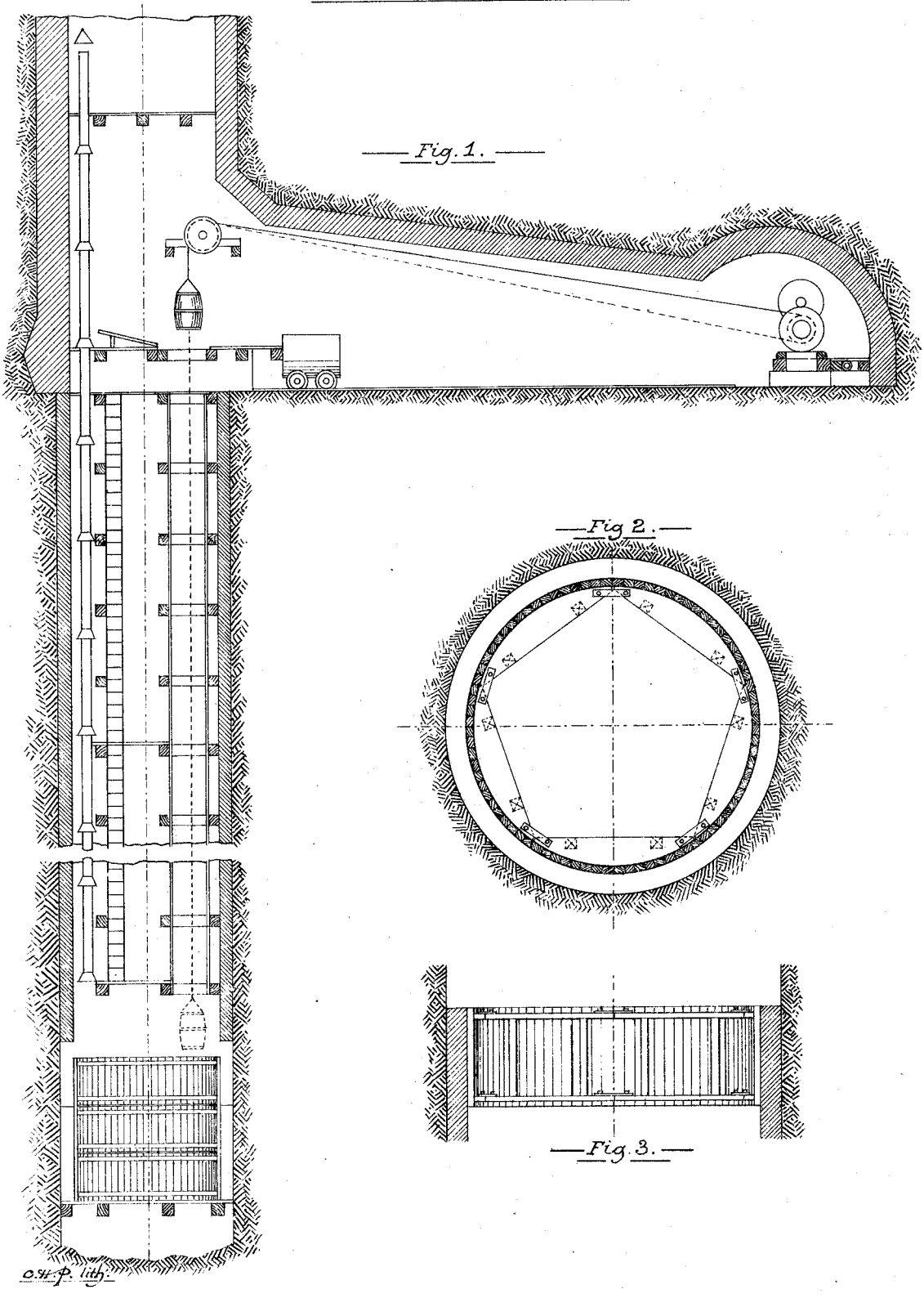


Fig 2.

Fig. 3.

C.W.P. lith.

metre (284 lb. per square inch), n being the pressure in atmospheres, R^1 the outside radius, and R the inside radius. Concrete only yields under a load of 300 kilogs. per square centimetre (4,267 lb. per square inch), so that it will easily, taking 1 : 10 as the safety coefficient, support a permanent minimum strain of 30 kilogs. per square centimetre (427 lb. per square inch); and the above-named thickness given to the lining in the present case, which only has a pressure of 19·8 kilogs. per square centimetre (284 lb. per square inch) to withstand, is therefore amply sufficient.

Comparison of the Old and New Systems.

The above table sums up the principal results connected with sinking (*a*) the first 50 m. with brick lining, and (*b*) that of the last 50 m. with simultaneous lining of concrete.

Combining the results obtained as regards advance, cost of labour and materials, it will be seen that the method with simultaneous concrete lining affords—(1) A mean daily advance of excavation and lining together 29 per cent. greater; (2) a mean cost of labour for sinking and lining together 82 per cent. less; and (3) a mean cost for materials 148 per cent. less than with brickwork. Moreover, while bricklayers are necessary in case *a*, labourers are sufficient in case *b*; and in the former case accidents may occur through the fall of stones from the sides and moving about the parts of the temporary lining, while in the latter accidents through the fall of stones are impossible, and there is no temporary lining.

INSPECTORS OF MINES.

Mr. James Coutts, Inspector of Mines, Thames, to the Under-Secretary, Mines Department.

Sir,— Inspector of Mines' Office, Thames, 28th May, 1900.

I have the honour to furnish herewith the annual returns and report on the gold-mining industry in the Hauraki district for the year ending the 31st March, 1900.

During the year a new and important gold discovery was made on the Kapowai Block, Kauri Timber Company's lease, near Gumtown. The reefs carrying the gold vary from 4 in. to 18 in. in thickness, and several parcels of quartz broken out and treated have in each case given good payable returns. There is yet a large area of country unprospected between the place where this gold has been found and the falls on the Kauaeranga River, in which it is reasonable to expect gold will be found in payable quantities. Although some of the new mines have been disappointing in not turning out as well as anticipated, it is pleasing to find the gold returns from the district, compared with the previous year, show a considerable increase, and the prospects are such that a decided increase in the output of gold may fairly be expected for the year ending the 31st March, 1901.

Coromandel.

Kapanga Mine.—This company's attention has been directed during the year to opening up their mine above the 450 ft. level, the work consisting of driving and stoping on the Kapanga and Scotty's reefs. There have been fifty-one men employed on wages continuously during the year; therefore a very large amount of important work has been carried out, the reefs not being a uniform thickness, but of a bunchy character, varying from 3 in. to 4 ft. in thickness. The quantity of ore obtained is not as large as would generally be expected from the number of men employed. The management does not look so much for the quantity of ore that may be obtained as the prospect of discovering a rich chute of gold, and it is to be regretted that a company like this, which has persevered and found money to prospect their mine, has not met with better success. During the year 626½ tons of quartz was treated for 1,346 oz. 7 dwt. of gold; value, £3,868 7s. 6d.

Hauraki Mine.—This company's operations have chiefly been confined to driving and stoping on the various leaders that traverse the claim above the 400 ft. level to the surface. There was a falling-off in the monthly gold returns for a portion of the year, and it must be encouraging to shareholders to learn that a considerable improvement has taken place during the last few months, and should this continue for a time dividends may be looked forward to at no distant date. In the old Union Beach section driving and stoping operations are proceeding on the leaders that traverse this section, and with encouraging results. 2,155 tons of ore and 1,648 lb. of specimens were treated at the company's battery for a return of 5,430 oz. 17 dwt. melted gold; value, £13,881 4s. 3d. 105 men were employed.

Blagrove's Freehold.—This company's operations were stopped for a portion of the year, the funds being exhausted, but, after reconstruction, again resumed work on the 28th May, and since then up to the end of March the drives on the reefs at the 200 ft. level have been extended 634 ft., rising done above this level 261 ft. and a winze sunk 11 ft., an intermediate level driven above the 200 ft. level a distance of 56 ft., and a considerable amount of stoping done. Colours of gold have been occasionally seen in breaking out the quartz, and pieces of picked stone obtained at different times, and several tons of general dirt from the most promising places in the reefs have been preserved for treatment.

Kathleen.—This company's operations have been directed in opening up and prospecting the reefs at No. 2 level, and, as the company has had twenty-four men constantly employed, a very large amount of work has been done. The property to all appearance is well situated, adjoining the Hauraki Company's ground, and it was confidently expected an important discovery would be made here; therefore it was disappointing that, after spending a large sum of money, no gold has been obtained.

Kathleen Crown.—There were twenty-three men employed in this company's mine in the early part of the year, the work being of a prospecting nature, but operations were stopped for the want of money, and pending the company being reconstructed.

Golden Pah.—This company's operations have been confined to opening up the reefs and leaders at the 80 ft. and 130 ft. levels, and, although the prospects met with from time to time were of an encouraging character, yet the results have not been as good as anticipated. 60 tons of ore has been treated for 164 oz. 17 dwt. of gold; value, £516 0s. 7d. Twenty-seven men have been employed.

Hauraki South.—Work in this mine has been chiefly carried on by tributers, who have worked on various leaders above the sea-level, and have had 33 tons of ore treated for 16 oz. 17 dwt. of gold; value, £51 18s. 8d. Seven men were employed.

Golconda.—This company have three men employed working from the shaft. The work has been of a prospecting character, and nothing of importance has been met with.

Hauraki Main Lodes.—This property was protected for some time for the want of funds to carry on the developing-work contemplated by the company. Work was again resumed in January last, which consists of driving two levels from the main shaft. One is being driven in a nor'-easterly direction, and is in a distance of 400 ft., and it is expected the Green Harp leader will be intersected in about another 100 ft. of driving. Another drive is being put in in a sou'-westerly direction, and is in a distance of 450 ft.; this is a prospecting-drive, and is driven for the purpose of intersecting unknown reefs that may traverse the western side of the property. The country is more favourable for gold-bearing reefs than it has been since the company commenced their first prospecting-work. As this company's claim is situated on the foreshore and below high-water mark, there is a good deal of water to contend with, but this is pumped out by a Tangye pump driven by a capable engine. At present 6,000 gallons per hour is being lifted, but the pump is capable of lifting 19,000 gallons per hour. Eighteen men are at present employed.

Hauraki No. 2.—In this mine two men are employed driving a crosscut from the creek-level to intersect the Hauraki reef. Several leaders have been met with, but, as the quartz did not contain much gold, there is a doubt as to whether they have got the reef they were driving for.

Zealandia.—Two men were employed in the early part of the year driving a crosscut from the side of the hill, but, as the prospects met with were not of an encouraging nature, work was discontinued and the claim protected.

Hauraki North.—This company's claim, being situated on what is known as the Wynyardton town allotments, and there being several claimants for the ground, has caused considerable trouble, and consequently work has been greatly kept back. A new shaft has been sunk a depth of 50 ft. and excavations made for the site of a pumping- and winding-engine, and, as there is every likelihood of this company either purchasing or amalgamating with some of the adjoining claims, it is fully expected a number of men will soon be employed to proceed with the development of the mine. From three to seven men have been employed.

Bunker's Hill.—This mine has been continuously worked during the year. Operations were confined to working on what is termed the 5 in. leader at No. 2 level, from which 42 tons of ore and 192 lb. of specimen stone was treated for 356 oz. 14 dwt. of gold, valued at £1,008 6s. 7d.; and for some time past work has been directed to the extension of the crosscut at No. 3 level and prospecting the leaders that have been cut through at this level, on which little work had formerly been done. This property adjoins the Hauraki Mine, and, being well situated, important discoveries have been expected from time to time, but as yet have not been realised. An average of thirteen men have been employed.

Welcome Find.—There were a few wages-men employed in this mine in the early part of the year, but, as sufficient gold was not obtained to meet the expenses, the directors decided to stop work on their own account and let the mine on tribute. From two to five men have been employed. The company crushed 1 ton 3 cwt. of quartz for 30 oz. 12 dwt., valued at £89 2s. 2d.; and the tributers 1 ton 12 cwt. for 32 oz. of gold, valued at £93 1s. 4d.

Trig Hill.—This claim has been worked for some time by Moore and Verran, tributers, but they have not been successful in finding payable quartz. The leader has varied from 2 in. to 4 in. 2 tons was treated during the year for 6 oz. of gold; value, £18 12s.

Port Charles District.

No steady work has been done in this locality during the year. A little prospecting was intermittently carried on, but nothing of importance discovered, and no returns of gold have been made during the year.

Cabbage Bay District.

A few men have been steadily employed prospecting in various parts of this district, but so far have not been successful in making any new discoveries of importance. In the Cabbage Bay Extended Quartz Claim (area, 5 acres) the owners, G. Beattie and party, have been working for some time on different leaders varying from 3 in. to 18 in. in thickness, and from which fair prospects have been obtained. They have broken out parcels of quartz from the leaders, which are to be treated at a small four-stamp battery, which was formerly known as Vizard's, situated near the mine, but which has been out of repair for some considerable time. At present they are busy renovating the battery and putting it in working-order, and expect to start crushing operations in a very short time. A small parcel of 2½ cwt. taken from these leaders was treated at the Hauraki Associated battery, Kennedy Bay, for a return of 9 dwt. of gold, which was considered by the owners to be satisfactory, and warranted the expenditure of putting the small battery in working-order, as the expense of getting the ore to any other battery would be very considerable. At present three men are employed in this mine.

All other work in this locality is principally confined to surface-prospecting, with an average of about eight men, and no further returns of gold have been made during the year.

Kennedy Bay District.

Prospecting operations in this part of the field have not been carried on with as much vigour during the year as was anticipated. It was thought, through the Hauraki Associated battery being available for the treatment of parcels of ore for prospectors and others, that prospecting operations would be more energetically carried on than has been the case. In the Maccaronie Mine, which is situated at Mata Mataharakeke, Mr. T. Barron and party have done a considerable amount of work in prospecting, and have discovered and opened up several leaders varying from a few inches to 2 ft. in width, some of which give very encouraging prospects. At present their attention is directed to prospecting and opening up one of the larger lodes which has lately been intersected, and from which good dish-prospects are obtained. It is their intention to have a few tons of this ore treated to ascertain its value previous to the contemplated erection of a small battery. Three men are employed.

Rose Mine (Area, 5 acres; owner, Mr. A. McNeil).—This claim has been the principal gold-producer in this locality. During the year 10 tons of quartz and 67 lb. of stone were treated at the Hauraki Associated battery for a return of 54 oz. 15 dwt. of gold, of an estimated value of £150 11s. 3d. From two to three men have been employed.

A limited amount of prospecting was carried on for some time on the Evening Star, Bay View, and other mines, which have now been abandoned, but unfortunately nothing of a payable description was discovered.

Sluicing operations on a small scale are also carried on in the Harataunga Stream by Whitehead and party, who are the owners of a sluicing claim on the creek. 500 tons of washdirt was put through the box for 5 oz. of gold, valued at £3 5s. 6d. per ounce. Dyer and party also hold a sluicing claim on the same creek, and obtain a little gold occasionally. Other sluicing claims have been taken up on the Waikoromiko branch, from which it is probable a fair amount of gold will be obtained. Lewis and party, owners of the Waikoromiko Sluicing Claim, treated a small parcel of 54 lb. of stone obtained from their mine at the Hauraki Associated battery for a return of 10 oz. 13 dwt. of gold, valued at £34 11s. 3d. Henderson and party have also taken up a sluicing claim on this creek, but no returns have been made up to the present. So far the sluicing operations carried on in this locality have not been very successful for the parties concerned; but, as very rich pieces of stone have been picked up in these creeks in several places at different times, there is also the chance of a good discovery being made. From eighteen to twenty-two men have been employed in this locality during the year.

Waikoromiko District.

New Four-in-hand Mine (Area, 247 acres; owner, New Four-in-hand Gold-mining Company, Limited).—This mine is under the management of Mr. Thomas Radford, jun. Operations have been steadily carried on during the year, with very satisfactory results. The work has been chiefly confined to driving and stoping on the leader and reef at the No. 1 level in the Four-in-hand section of the property. The leader averages about 3 in. in width, and in some places it has been very rich. Some very good hauls of specimen stone have been obtained in driving on this leader southwards, which junctioned with the main reef, which has averaged a thickness of 18 in., and it is from this reef that the bulk of the crushing-dirt is being obtained. Although no great deposit of gold has been found in this reef, it has been very consistent, and patches of good specimen stone have been frequently met with. The country encasing the reef and leader is a very firm class of andesite, and in places along the course of the reef diorite frequently makes close to both walls. A small amount of driving has been done at No. 2 level of the same section, the reef being of about the same appearance as in the upper level. In the other sections of the property a little prospecting has been done, but nothing of a permanent character has yet been undertaken. The battery which was in course of erection by the company in the early part of the year was completed, and crushing operations started in May, from which time payable returns have been obtained from the mine. The battery, which is driven by steam-power, consists of five head of stamps and two berdans, also a small testing plant of two stamps, and is connected with the mine by an aerial tramway, and the whole of the plant is working in a very satisfactory manner. The mode of treatment is wet crushing and amalgamation, the ore being free-milling. During the period the battery has been running, up to the 31st March, 993 tons of quartz were put through for a return of 2,194 oz. 8 dwt. of gold, valued at £6,345 19s. 9d., which must be considered very satisfactory for the shareholders. Further developments have been effected on the other sections of the property, in some of which gold-bearing reefs have already been opened up. It is therefore reasonable to suppose that this mine will become one of the principal gold-producers in the district. The work during the year, which has been mostly confined to the Four-in-hand section, consists of 234 ft. of driving, a rise put through to surface 129 ft., and 155 fathoms of stoping, exclusive of some prospecting operations on the other sections of the property. Twenty-three men are at present employed.

Lillis Mine.—This property is situated on the dividing-ridge of the Waikoromiko and Whangapoua watershed, and is owned by the Kauri Freehold Gold Estates Company. It is worked on tribute by Lillis and Ryan, who have tried a portion of the ground for a considerable time with fair success. Their attention has been chiefly directed to working on some small leads and stringers which they have opened up in the higher levels, and from which very good returns have been obtained in proportion to the quantity of ore treated. Only 1 ton of ore has been treated during the year for a return of 41 oz. 9 dwt. of gold, valued at £124 7s. Two men are employed.

Waikoromiko Mine (Area, 5 acres).—This claim is worked by the owners, McIsaacs and Goodall, who have done a good deal of work in prospecting the ground, and, although some nice-

looking leaders have been opened up, they have not been successful in discovering what might be termed a rich chute of ore. A trial crushing of 2½ tons broken from these leaders was treated for a return of 1 oz. 19 dwt. of gold, valued at £5 13s. 9d. Two men are employed.

Forest Queen Mine (Area, 50 acres).—Operations in this mine during the greater part of the year were carried on by the owners, Messrs. Horne and Johnson, who have done a good deal of work in prospecting and opening up the different reefs that have been intersected in the property. The work was principally confined to developing the reef at the No. 2 level, where it has been opened up to a fair extent, but is very irregular in size, varying from a few inches to 3 ft., but at times makes exceedingly good stone. During the year 1 ton of quartz and 71 lb. of picked stone was treated for a return of 57 oz. 5 dwt. of gold, valued at £126 11s. 10d. An amalgamation has now taken place with the Holly Branch Claim, which adjoins the Forest Queen, and a new scheme of development-works is to be carried out. A ten-head stamp-battery, which was formerly on the Three Brothers Mine, is to be erected, for which preparations are being made. The management consider that a large quantity of payable ore can be obtained from the property if it can be conveyed cheaply to a battery. From four to six men have been employed on both sections.

Prospecting operations are also carried on in the Federal, Clarion, Victory, Lilly, Nordenfeldt, and Napier Claims, with two men on each, some of which had small returns, but nothing of importance.

Royal Oak, Tokatea.—This mine was continuously worked up till the month of March, when operations were stopped owing to the capital of the company being exhausted, and it was found necessary to obtain six months' protection to give time to enable the company to reconstruct, so as to raise money to further develop the mine, which will no doubt be forthcoming, as the property is still considered a valuable one, although the gold returns show a considerable decrease as compared with the previous year. This can only be accounted for by the reefs being of a patchy nature, and should work be proceeded with, a rich chute of gold may be obtained at any time. There has been a large amount of work done in the mine during the year in driving, rising, and stoping on the reefs and leaders, from which 1,042 tons of general ore and 235 lb. of picked stone was treated at the company's mill for 2,001 oz. 13 dwt. of gold, valued at £5,117 3s. 6d. An average of fifty-five men were employed in the mine and battery.

Hauraki Associated Mine.—This mine, which is situated on the eastern side of the Tokatea Range, has been continuously worked during the year. The mine is worked from three main levels, which are 500 ft., 700 ft., and 850 ft. in length respectively, with 100 ft. of backs between the levels. The principal development-work during the year has been extending the No. 3 level to a point 800 ft. from the mouth, where it was decided to make a connection with the No. 2 level, which was accomplished by rising 40 ft. and sinking 60 ft., which provides good ventilation throughout the workings. The necessary ventilation to enable No. 3 level to be driven the required distance and to rise the 40 ft. was obtained by erecting a small furnace at the mouth of the level, which was connected with air-pipes from the face, which acted very satisfactorily, no water for other methods being available. Operations on the ore-bodies during the year have been principally confined to the foot-wall and Rainbow End leaders. The foot-wall leader is very small, varying from 1 in. to 4 in., but it has produced a fair amount of stone of good quality. The Rainbow End lead is a larger body of stone, varying from 6 in. to 3 ft., and has also produced ore of a payable quality. In opening up on these leaders in the No. 3 level 60 ft. of driving and 350 ft. of stoping has been done on the foot-wall, and 70 ft. of driving and 480 ft. of stoping on the Rainbow End. Since the connection was made between the No. 2 and No. 3 levels all the ore coming from different parts of the mine is passed down and conveyed along the No. 3 level to the hopper; from here it is carted to the battery, which is situated on the flat at the foot of the range, a distance of about three miles. During the year 100 tons of quartz was treated from the mine at the company's battery for a return of 674 oz. 4 dwt. of gold, valued at £1,917 15s. 7d. The average number of men employed during the year was nineteen wages-men and five tributers, whose operations have been confined to the No. 1 and surface levels.

Harbour View Mine (Area, 63 acres).—This mine has been principally worked by tributers during the year, their operations being confined to working on the small leaders, from which patches of good stone are obtained. From four to six men have been employed during the year, who treated 3 tons 12½ cwt. of quartz at the Hauraki Associated battery for a return of 46 oz. 10 dwt. of gold, valued at £130 18s. 11d.

West Tokatea Mine (30 acres).—Operations in this mine have been steadily carried on during the year, the work being mostly confined to developing the reef at the No. 1 and No. 2 levels. The reefs vary from 2 in. to 1 ft. in width, and have been opened up to a fair extent in the different levels, but so far no very rich chute of ore has been discovered. During the year 17 tons of quartz was treated for a return of 36 oz. 6 dwt. of gold, valued at £103 12s. Seven men were employed during the year.

Queen of the North.—This mine has been partly worked by tributers during the year, no crushings having taken place on behalf of the company. On an average six men have been employed, but at present only four tributers are working the mine, and are extending the road-level for the purpose of opening up a new block of ground on some of the small leaders, from which good stone was obtained at different times, but so far they have had no crushings during the year. 3 tons 5 cwt. 36 lb. of stone was crushed at the Hauraki Associated battery by the previous tributers for a return of 17 oz. 16 dwt. of gold, valued at £51 3s. 6d.

Tokatea Consols Mine (Area, 30 acres).—Only a limited amount of work has been done in this mine during the year. At present the mine is under absolute protection pending the completion of arrangements that are being made to raise further capital to carry on the development of the mine, in which a considerable amount of work has been done. Six reefs, varying from a few inches up to 4 ft. in width, have been operated on in the different levels, but so far they appear to be of a very

patchy nature, which causes regular crushings or returns to be very uncertain; but with further developments it is probable that an extensive run of payable ore may be opened up. During the year only 8 tons of quartz and 100 lb. of stone was treated on behalf of the company for a return of 21 oz. 12 dwt. of gold, valued at £61 11s. 6d. During the same period tributers treated 1 ton 5 cwt. of quartz for a return of 10 oz. of gold, valued at £28 15s. Six men were employed when the mine was working, but at present only two tributers are working on the eastern section of the property.

East Tokatea Mine.—This mine is worked on tribute at present by Messrs. Ring and Oliver, who have worked on some of the smaller leaders that have been opened up in the mine, and from which very good stone is obtained at times. During the year 16½ tons of quartz was treated from the mine at the Hauraki Associated battery for a return of 91 oz. 3 dwt. of gold, valued at £240 2s. 6d. Two men are employed.

Hauraki Gem Mine (Area, 54 acres).—No wages-men are employed in this mine, but a party of tributers (Messrs. Gunn and Andrews) have done a lot of prospecting-work in the ground, and have opened up several small leaders, from which some very good stone has been obtained, but of a very patchy nature. During the year 1 ton 15 cwt. of quartz and 46 lb. of picked stone was treated at the Hauraki Associated battery for a return of 49 oz. 15 dwt. of gold, valued at £139 6s. Two men are employed.

Prospecting-work is also carried on in the Ruby, Try Again, Miners, and Phœnix Claims by two men on each, some of which have given small returns, but nothing of importance.

Scotty's Mine.—Work in this mine has been continuously carried on during the year. The operations have been principally confined to driving, stoping, and developing the Scotty's reefs in the Corby and 300 ft. levels, where at times stone of good quality is obtained. There has also been a considerable amount of work done in other portions of the mine, on the Scotty's and Brewer's reefs, but at present operations are directed to the Scotty's reef in the above-mentioned levels, from which it is anticipated that good hauls of stone will be obtained. During the year 97 tons of quartz was treated from various parts of the mine at the company's battery for a return of 588 oz. of gold, valued at £1,613 11s. 3d. On an average twenty-four men were employed during the year.

New Hauraki Gold Properties.—This property, which also includes the claim formerly known as the Success Mine, has been continuously worked during the year. In the New Hauraki section a considerable amount of work has been done in prospecting and opening up the large East and West reefs. They vary from 4 ft. to 25 ft. in width, and have been driven on several hundred feet and cut through in several places, and carry a little gold, but so far not of a payable quality. In the Success section of the property the various reefs and leaders have been prospected and operated on to a great extent, but only a limited amount of payable ore was obtained. During the year 16 tons of quartz was treated on behalf of the company at their battery for a return of 73 oz. of gold, valued at £211 14s. On an average seventeen men were employed in the mine during the year.

Buffalo Mine (Area, 10 acres).—This mine, which is situated on Buffalo Creek, is private property, and has been worked during the year on tribute by A. Ross and party, who have done a lot of work in prospecting the ground, their attention being chiefly directed to operating on small leaders, from which picked stone is obtained at times. During the year 6 tons of quartz was treated by the tributers for a return of 48 oz. of gold, valued at £147 5s. 1d.

Shetland Mine (Area, 17 acres).—Prospecting operations have been steadily carried on in this mine during the year with from three to four men. Two prospecting-levels have been driven (No. 1, 190 ft.; No. 2, 185 ft.), and several reef formations cut, in which a little gold was occasionally seen. At present a small shaft is being sunk from the No. 2 level for the purpose of gaining backs and proving their value downwards. The shaft is at present down a depth of 45 ft., it being intended to sink a further depth of 50 ft. before opening out to drive to cut the reef, which is expected to be met with in about 65 ft. of driving. Should much more water be met with, the company intend to erect a small pumping plant to enable them to prove the ground to the depth mentioned, as they are very sanguine of discovering a payable run of ore. No crushings have been recorded during the year.

Standard Mine (Area, 30 acres).—Operations in this mine are at present stopped, the mine being under protection.

Karaka Block.

Poneke Nos. 2 and 3 (Area, 68 acres 4 roods 13 perches).—Little or no work has been done on this ground during the greater part of the year, and it is at present under protection.

Pukemaukuku.

Aitken's Freehold.—This ground has been steadily worked during the year with three men. The operations in hand at present consist in driving a low level and prospecting the higher workings. A considerable amount of work has been done on the different reefs and leaders which have been opened up, and in some cases very encouraging prospects were obtained, but no quartz has been treated during the year.

Preece's Point.—No work has been done in this mine during the year, but it is expected that operations will soon be resumed. I am informed a reconstruction of the company has taken place, and the necessary funds provided to prospect and develop the mine, on which a considerable amount of money has already been spent in erecting powerful pumping and winding machinery and sinking the main shaft. Only a limited amount of prospecting-work was done when the mine was closed down for the want of funds.

Tiki District.

Progress-Castle Rock Mine (Area, 60 acres).—Work in this mine has been steadily carried on during the year in developing and opening up the mine, and carrying on the necessary outside work in connection with a small battery which has been erected by the company at the mine. In the mine No. 1 reef has been opened up to a considerable extent from the No. 4 level upwards, and averages about 8 in. in width, and at times makes a little stone of good quality. The battery lately erected is driven by water-power, and consists of two stamps, 830 lb. each, two berdans, and one Dodge ore-crusher. Crushing operations were started in the month of February, and the mode of treatment is wet crushing and amalgamation. The ore previous to going through the stamps is subjected to a severe roasting, which makes it more friable for crushing, and frees the stone of some of the base minerals which it contains. The battery is connected with the low level and kilns by a ground-tramway 412 ft. in length. The water-pipes, which are connected with the Pelton, are 7 in. in diameter, and are carried back to the dam a distance of 670 ft., giving an effective fall of 120 ft., and the whole of the plant is working very satisfactorily. The mine is also well opened up, and connections are made between the different levels, so that ore coming from any part of the workings can be cheaply passed on to the battery. Although no clean-up had taken place at the company's battery previous to the end of the year, the management is sanguine of the mine proving a payable concern, and negotiations are now proceeding for an amalgamation with the Matawai Mine, which adjoins the property, and in which several reefs have been opened up. During the year a small parcel of 420 lb. of stone taken from the reef which is operated on at present was treated at the School of Mines, Thames, for a return of 69½ oz. of gold, valued at £192 10s. On an average eight men have been employed during the year.

Coromandel Freehold.—This mine has been shut down for the greater part of the year, but it is expected that operations will again be resumed in a short time on one of the sections of the property.

Prospero Mine.—Operations in this mine at present are confined to extending a low level to intersect the main reef at a depth of about 100 ft. below the top workings, where it was opened up to a fair extent, with encouraging prospects, in the early part of the year. An option was taken over the ground, and it was decided to drive a low level, the option-holders providing £50 a month towards the cost, and it was carried on till the month of November, when the option was withdrawn. Since then only two men have been employed in driving this level, which is in a distance of about 185 ft. in very tight shooting country, and they expect to cut the reef in about another 40 ft. of driving.

Prospecting is also carried on in the Butterfly, Royal Mint, Pukewau, and Pride of the Tiki Claims, with from one to two men on each, but nothing of importance has been discovered up to the present.

Manaia District.

Very little work has been done in this locality during the year.

The Golden Hill Mine was worked for a time on tribute by Verry and party, who treated 6 tons of quartz for a return of 7 oz. 17 dwt. of gold, valued at £23 11s. 6d.; but this was not considered payable, and they stopped work. Since then the ground has been taken up by Holloway and party, who intend giving it a trial. A little prospecting has also been done on the British Fleet ground, but nothing payable has been discovered.

Opitonui.

Kauri Freehold Gold-mining Company.—The forty-head stamp-battery which was in course of erection last year has been completed. Crushing operations were started in the month of June, and have been continuously carried on since, the mode of treatment adopted being wet crushing, amalgamation, and cyaniding. The battery is a very complete one, fitted with all the necessary appliances for the above treatment. The motive-power is steam, which is supplied by two Babcock and Wilcox boilers to a horizontal compound Corliss engine of 130-horse power, with other small engines for driving the electric-instillation plant and solution-pumps, &c. Extensive operations have been carried on during the early part of the year in the Maiden, Lanigan, Carvill, and Hilda sections of the property in opening up and developing the various reefs, and it was expected highly payable returns would be obtained; but the ore treated at the mill was not as good as anticipated. This was a great disappointment, the company having spent a large sum of money in opening up and equipping the mine. Funds becoming exhausted, it was found necessary to reduce the number of men and stop a considerable amount of development-works for a time, pending the general manager's (Mr. Montgomery) visit to England to consult with the directors as to ways and means to carry on the various works in progress at the deeper levels in the Lanigan, Maiden, and Carvill shafts. I am informed he has induced them to provide ample capital. During the past few months the work in the mine has been principally confined to stoping on the Maiden, Lanigan, and Hilda reefs, which were opened up to a considerable extent from both the adit- and shaft-levels. The bulk of the ore was obtained from the Maiden reef, which varies from 2 ft. to 6 ft. in thickness. The Carvill shaft, on which a temporary sinking plant was erected, has been equipped by permanent winding and pumping machinery, with good substantial poppet-heads, safety-cages, &c., which will be capable of developing this section of the property to a considerable depth. Since crushing operations were started, and for the period up till the 31st March, 14,439 tons of ore was treated for a return of 7,466 oz. 10 dwt. of bullion, valued at £18,422 15s. 7d. An average of 238 men were employed during the year.

Kuaotunu District.

Waitaia Mine.—The work has been confined chiefly to opening up the No. 3 reef at No. 4 level for the purpose of commencing stoping operations. 504 ft. of driving and 25 ft. of rising have been done on the reefs during the year, also crosscut drives have been extended 208 ft. The No. 3 reef has been driven on at the low level a total distance of 850 ft., and there are 250 ft. of backs over this drive on the reef (which is connected by rises with the upper levels) now available for stoping operations. A parcel of 300 tons of quartz is now being put through the Great Mercury battery, from which a payable return is expected. The treatment is wet crushing, amalgamation, and cyaniding.

Kapai-Vermont.—This property changed hands from the Kapai-Vermont Gold-mining Company to the New Zealand Mines Trust (Limited) for the sum of £6,100, and operations in the mine were resumed. The first work was the repairing of three main passes leading to the surface-levels, and two chambers were cut out at the westward side of the crosscut at the low level, preparatory to sinking two winzes on the lode. An attempt was made to sink, but after getting down 12 ft. water was met with, and the work had to be discontinued until the water was drained by the Mariposa Company, which was pumping to a depth of 138 ft. below the level named. The water eventually drained off, and No. 1 winze was sunk to a depth of 59 ft., the reef averaging 5 ft. in thickness, the ore being payable throughout. The No. 2 winze was sunk 55 ft., the reef being 7 ft. thick, and tests of the quartz from here gave excellent results. The low-level tunnel has also been extended on the reef, and, although the country is of a hard nature, the prospects of the reef look very encouraging. As the Mariposa Company decided to stop all work in their mine, including the pumps, the sinking of the winzes had to be discontinued, as the water rose rapidly. For the last five months the claim has been partially protected, and they were allowed to work with two men, pending arrangements with the Mariposa Company as to pumping, or an amalgamation with the two companies.

Mariposa Mine.—This claim has been protected for nearly six months, and prior to this stoping operations were carried on on the reef above the main adit-level, from which 1,292 tons of ore was broken down, and treated at the company's mill for 719 oz. 9 dwt. of gold, valued at £1,620 4s. 6d. As the value of the ore was not sufficient to pay the cost of breaking and treatment work was stopped. A level was opened out at a depth of 100 ft. in the pumping-shaft, and the Try Fluke reef driven on for a distance of 450 ft., and the eastern branch of the reef driven on 37 ft. The reefs at this level, as far as they were driven on, were not of a payable character, and all work had to be stopped for a time for the want of funds.

Great Mercury.—This property is owned by a syndicate, who in the early part of the year worked it for a time by wages-men, but as it did not prove payable the men were discharged and the mine let on tribute. Although the tributers have not discovered anything rich yet, they have been successful in getting quartz which contains a fair percentage of the precious metal, and they are in hopes it will lead on to a chute of ore of payable quality. 85 tons of ore and 206 tons of tailings were treated at the company's mill for 169 oz. 16 dwt. of gold, valued at £381 2s. 1¾d. An average of seven men have been employed.

Irene.—This mine has been opened up by four adit-levels from the side of the hill, termed the Nos. 1, 2, 3, and 4 levels, the No 4 level being 260 ft. below the surface. There are several reefs traversing the ground, but the Try Fluke is the only one developed to any extent. This reef is 2 ft. to 6 ft. in width, and carries narrow chutes of ore, usually a considerable distance apart. The company spent a fairly large sum of money on development-work, which proved the ore opened up at the present levels to be too small in quantity, taking the value into consideration, to be worked on a sufficiently large scale to return payable results, and the ground was therefore let on tribute to a party of six men, who have worked it for the last twelve months. There is a ten-head stamp-battery in connection with the mine, and this has been used by the tributers for crushing their quartz. The tributers have stoped out portion of the reef from the No. 3 level upwards, and crushed 795 tons of ore for 446 oz. of gold, valued at £1,167 13s. An average of seven men have been employed.

Juno.—This mine is worked by a party of four tributers, who have extended the low level on the reef a distance of 40 ft., making the total distance driven on the reef 550 ft. Stoping operations have also been carried on on the leader above this level, which has varied from ⅛ in. to 1½ in. in thickness. The leader is very patchy, but rich specimens have been obtained. 12 tons of ore and 200 lb. of specimens was treated during the year for 271 oz. 14 dwt. of gold, valued at £611 16s. 10d. Four men have been employed.

Handsworth.—This claim has been continuously worked during the year by two men. There is one reef 4 ft. thick which has been driven on for some distance at the low level, but work has been more confined to the small leaders for some time past. A small crushing plant is being erected by Mr. Woodcock, the owner of the mine, which will consist of a three-stamp battery and a berdan, and the treatment will be the ordinary wet crushing and amalgamation. 220 lb. of specimens was treated for 60 oz. 2 dwt. of gold, valued at £149 7s. 6d.

There are a few men prospecting in this district—viz., James Hosie, Diamond, and Whelan—but so far they have not met with much success.

Mercury Bay District.

As there were no means of testing quartz that was broken out of the different reefs and leaders in this district without sending it to Auckland or some other batteries at a distance, and at considerable expense, the Minister of Mines decided to have a small three-stamp mill, berdan, &c., complete, erected at the junction of McIsaac's Creek and the Mahakirau Stream for the purpose of giving every facility to prospectors in this district to test quartz, and it was fully expected when

this was completed a number of men in the surrounding district would have taken the opportunity of testing some of the reefs that were said to contain gold in payable quantities. So far the result has been disappointing. The testing plant was completed in the beginning of the month of December, and all the quartz treated in the plant up to the present is 21 tons 10 cwt. and 20 lb. of picked stone for 5 oz. 13 dwt. of gold, valued at £15 10s. 9d. About nine men are employed in the district.

Gumtown.

The new goldfield discovered in the early part of the year is about six miles in a southerly direction from Gumtown. Gold having been discovered by Kenny, Murphy, and others in payable quantities, a number of leases were pegged off, but the ground where the gold was found was on the Kauri Timber Company's lease, and in consequence considerable delay has been caused in granting the leases, pending arrangements with the Kauri Timber Company. This has now been amicably settled, and some of the leases granted. There were in the beginning of February eight men employed in the Welcome Jack, five men in the Kapowai No. 2, three men in McIsaac's Big Beetle, and some others prospecting in the immediate neighbourhood of these claims.

In the Welcome Jack Claim three leaders were opened up on the surface, running parallel to each other, and about 30 ft. apart, varying from 4 in. to 8 in. in thickness. A crosscut was driven from the side of the hill, and the No. 1 leader intersected and driven on for a short distance, and a winze sunk on it to a depth of 40 ft. The No. 2 leader was driven on for a distance of 60 ft. from the western side of the hill, and the No. 3 leader was only opened up by a trench on the surface. The quartz treated from these leaders has given good payable results, and, as work has again been resumed, discoveries of importance may be met with at any time, as it is new ground and unprospected.

Big Beetle.—The No. 1 leader varied from 6 in. to 18 in. in thickness. Three drives have been started on this leader from the side of the hill, but have only been driven on a few feet above each other. Gold is freely seen in the quartz as it is broken out, and in several trenches cut through the outcrop of the lead good dish-prospects can be obtained. On the No. 2 leader there is a long open face, and a drive put in on the leader for a distance of 40 ft. Gold is seen here in very small veins of quartz, which are running parallel to No. 1 leader, and about 30 ft. apart. This claim looks exceedingly encouraging, and should when opened up give good results.

Meikle's Kapowai No 2.—The work in this claim was being done by blasting the country and iron veins that carried the gold out in an open face, and as the rock was shot out the small veins carrying gold were selected for treatment.

Mata District.

A few men have been intermittently employed prospecting in this locality during the year, but have not been successful in discovering anything of importance.

Tapu District.

Mahara Royal (Limited).—In the Royal section of this mine the drive on the reef in the low level has been extended 366 ft., and 1,170 ft. of stoping has been done on the Royal reef, the reef varying from 2 ft. to 5 ft. In the Shannon section a crosscut was advanced 101 ft., when a leader about 1 ft. in thickness was intersected. This was driven on for a short distance, but, being small and of low grade, driving was discontinued. A new surface-prospecting drive has been put in on this section a distance of 70 ft. A crosscut in the Fluke section has been put in a distance of 307 ft., when a leader about 1 ft. thick was met with. This leader has been driven on for a distance of 58 ft., but continues small, and is also of low grade. During the year about 3,448 tons of ore and tailings has been treated at the company's battery for a return of 1,031 oz. of gold, valued at £3,207 2s. 6d. An average of forty-six men have been employed.

Bullion Mine.—This ground, which was formerly known as the Sheridan Mine, has been steadily worked during the year. Operations were carried on during a part of the time by the company, who have done a fair amount of work in prospecting and developing the mine, but, the returns obtained not being payable, the company stopped work and let the mine on tribute to C. Manuel and party, who were successful in discovering a chute of payable ore, on which stoping operations are now carried on over the back of the low level. During the time operations were carried on by the company fourteen men were employed, but at present seven tributers and one wages-man are employed in connection with the mine and battery. During the year 176½ tons of quartz and 126 lb. of picked stone was obtained from the mine, which was treated at the company's battery for a return of 389 oz. 15 dwt. of gold, valued at £1,210 12s. 6d.

Prospecting-work has also been carried on in the Golden Horn, Diehard, Royal Star, and Black Swan Claims, with one to two men in each.

Waiomo.

Monowai Mine.—This mine was stopped for a few months on account of the ore treated at the battery not giving a return of bullion nearly equal to the assay-tests made from time to time. 312 tons of ore was treated at the company's battery for bullion valued at £76 10s. 2d. This being disappointing, the directors, not being satisfied with the treatment, directed the general manager to ship 60 tons of concentrates to the smelting-works at Dapto, New South Wales. This was successfully treated, giving a yield of bullion worth £10 per ton, and on this result they decided to add further to their own plant by erecting three Union improved concentrators with a view to reducing the ore down to concentrates, and shipping it to New South Wales for treatment. Operations have again been resumed in the mine, and driving and stoping on the reef, which varies from 6 ft. to 42 ft. in thickness, is proceeding. An average of nineteen men have been employed.

Broken Hill Mine.—This mine has been worked by two men, but, as the reefs are large, and of a hard nature, the amount of prospecting done during the year has been limited.

Paraquet and Comstock.—Two men have been employed in each of these mines, but the work has been of a prospecting nature, as no quartz has been treated at any of the batteries.

Puru Creek.

Puru Consolidated.—There has been very little work done in this mine during the year. Two men were employed by the company doing some surface-prospecting, and latterly the mine has been let to a party of tributers, who I am informed are meeting with a fair amount of success. No crushings reported for the year.

Tararu Creek.

Eclipse, Limited (Area, 200 acres).—This mine is worked under the supervision of the Thames Exploration Syndicate. During the year the shaft has been sunk to a depth of 150 ft., and from this point the No. 1 or main reef has been driven upon for 500 ft., making the total length of drive on line of reef 700 ft. The ten-stamp battery, water-race, and aerial tramway were completed and crushing commenced in the month of November. A winding-engine was also erected on the shaft at the mine, together with all the necessary appliances, and the whole is working in a very satisfactory manner. 890 tons of ore has been treated at the mill for 532 oz. 10 dwt. of gold, valued at £1,495 18s. 10d., which has more than paid expenses. An average of forty-two men have been employed.

Chicago Mine.—There has been very little work done in this mine during the year. The ground has been let to a party of tributers, but they have not been successful in discovering anything of a payable nature.

Iron Cap.—This mine has been partially under protection during the year, and from two to four men have been employed on work of a prospecting character.

Tararu Creek Gold-mining Company.—This mine has been vigorously worked, and the battery has been fully employed in crushing the ore as it is won from the mine, from which regular monthly returns have been obtained. The work in the mine has consisted of driving, rising, and stoping on the reef at the following levels: At the battery-level—Driving done on the reef, 200 ft.; crosscutting done on the reef, 100 ft.; rising done on the reef, 110 ft. At the Dunedin level—Driving done on the reef, 460 ft.; rising done on the reef, 200 ft.; stoping done on the reef, 33,600 ft. At the Charter level—Driving done on the reef, 350 ft.; rising done on the reef, 120 ft.; stoping done on the reef, 6,000 ft. The reef has varied in size from 5 ft. to 30 ft., and 16,088 tons of quartz has been produced and treated at the battery for 8,127 oz. 7 dwt. of gold, valued at £16,313 4s. 8d. The total output from the mine since this company commenced operations in September, 1895, is 31,114 tons, valued at £32,163. The mode of treatment is wet crushing, amalgamating, and cyaniding, and the present reduction plant consists of thirty head of stamps (1,000 lb.), four 90-tons cyanide-vats, three agitation-vats each of 40-tons capacity, and six berdans. An increase of cyanide-vats is contemplated, with the addition of filter-presses, which, if carried, will considerably improve the percentage of extraction.

Kuranui.

Kuranui Mine.—There has been an average of thirteen men employed on this property during the year—nine wages-men and four tributers. The company's operations have lately been directed in opening Barry's reef towards what is known as the Deep Lead section. The reef looks well, and the manager is hopeful of an important discovery being made, as the drive is being extended in close proximity to the place where rich gold was obtained when worked by the old Kuranui Company.

Moanataiari Creek.

New Alburnia Mine.—This company's property has been under protection for the last twelve months. A crushing of 40 tons of ore was treated in the month of April last year for 10 oz. 13 dwt., valued at £27 8s. 6d. Nothing has transpired as to the future operations of the mine.

Tudor Claim.—This claim is worked by two men. The leader varies from 2 in. to 10 in., from which 8 tons have been crushed for 5 oz. of gold, valued at £13 10s.

Golden Drop.—Two men have been employed in this mine, the leaders having varied from 2 in. to 4 in. 10 tons have been crushed for 53 oz. 7 dwt., valued at £134 9s. 10d.

Darwin.—Two men have been employed on this claim. The work having been of a prospecting nature, no returns have been sent.

New Whau Mine.—Work in this mine has been been principally confined to prospecting and developing the Sons of Freedom reef, which averages about 3 ft. in width, and at times pieces of stone are obtained showing dabs of gold. The operations are carried on from the old Sons of Freedom tunnel, which has been repaired, and a new truck-road laid into the workings a distance of 1,250 ft. from the mouth of the level. At this point a rise was put up on the reef to an intermediate level, a height of 60 ft., where driving operations are proceeding on the reef with encouraging prospects. 7 tons of quartz broken from this reef was treated for a return of 15 oz. of gold, valued at £40. At present seven wages-men and five tributers are employed.

New Moanataiari Gold-mining Company (Limited).—This property is owned by a London company, and comprises an area of 110 acres 2 roods 3 perches, about half of which is included in the drainage area. The work carried out during the year ending the 31st March has been chiefly confined to prospecting the Cambria reef at the Cambria Nos. 3 and 4 levels from the Moanataiari shaft. The Cambria No. 4 drive was advanced a further distance of 190 ft. east through the break, the reef proving a strong body of quartz fully 10 ft. in width, but of a very low grade. A crosscut

was then driven in the foot-wall 80 ft., and a rise put up 30 ft., which connected with the intermediate level. This intermediate was then driven west a distance of 110 ft., and a crosscut put in the hanging-wall 25 ft., but, as nothing payable was met with here, driving was discontinued, and all work was centred in prospecting the reef from No. 3 level. A drive was started on the foot-wall, and continued for a distance of 210 ft. to the junction of the Red Queen leader. A short block of ground was taken out on the main reef for a length of 50 ft. by 50 ft. high. At present work is confined to stoping on the foot-wall of the reef at this level. About 100 ft. of driving was completed at this level, on the course of the Reuben Parr reef, in an easterly direction, and 25 ft. of crosscutting in the hanging-wall. At the 100 ft. level a crosscut, which is now in progress from the foot-wall of the Reuben Parr reef to intercept the Golden Age reef, is now in a distance of 65 ft. The block of ground at the Point Russell level, immediately above this point, was broken out by the old company, with highly remunerative results. The present company has expended nearly £48,000 in prospecting and developing the ground above the 400 ft. level, in all parts of the mine, but the results have been very disappointing and discouraging. Some 250,000 tons of ore was opened up by the late management, but the battery trials proved it to be too low grade to pay even the cost of breaking. The value of the great bulk of this immense ore-reserve varies from 1 dwt. to to 5 dwt. per ton. A large number of tribute parties are employed in the Moanataiari Mine, working on small branch leaders and veins which could not be profitably worked by the company. From the tabulated statement of the gold return it will be seen that the gross average earnings of the tributers did not amount to the rate of current wages in the district. The gold obtained by the company during the year was 519 tons for 553 oz. 9 dwt., of the value of £1,529 18s. 4d.; and by the tributers, 1,140 tons for 2,117 oz. 4 dwt., valued at £5,807 18s. 9d. An average of twenty men was employed by the company on wages, and fifty-five tributers.

Kuranui-Caledonian Gold-mining Company (Limited).—The only work carried on by the company on wages for the year has been the sinking of a winze on the Cambria reef, near the Moanataiari boundary, at No. 3 level. When sinking was commenced the reef was large, compact, and the quartz promising in appearance; also, as a number of small veins of quartz on the hanging-wall, all carrying gold, were dipping into the reef, it was expected, where they junctioned with it, an important discovery of gold would be made. The winze has attained a depth of 45 ft., and, as nothing payable has been met with, this has been discontinued, and has been rather a disappointment. Five loads of quartz and 19 lb. of picked stone, broken from the leaders on the hanging-wall of the reef in sinking the winze, when treated gave a yield of 19 oz. 7 dwt. of gold, valued at £53 4s. 2d. Seven wages-men were employed. The tributers crushed 467 tons for 2,768 oz. 10 dwt., valued at £7,658 7s. 8d. An average of fifty-eight men were employed tributing on the various reefs and leaders that traverse the mine from the 400 ft. level upwards.

Waiotahi Creek.

Waiotahi Mine.—This mine continues to keep up its reputation, and has during the year paid two dividends amounting to £900, making a total of £36,450 since commencing operations. The leaders and reefs vary from ¼ in. to 5 ft. thick. 955 tons of ore has been produced, which has given a return of 1,493 oz. 1 dwt. of gold, valued at £4,110 19s. 5d. The work is confined to working the various leaders from the No. 3 level of the company's shaft upwards. Sixteen men are employed.

Nonpariel Mine.—Operations in this mine were carried on till the month of August by the Nonpariel Gold-mining Company, who did a considerable amount of work in prospecting and developing the various reefs, but, not getting sufficient returns to pay the expenses in connection with the mine, the shareholders decided to sell the mine, which was accordingly done, and was purchased by Mr. A. Greenslade on behalf of a syndicate, who have since carried on operations in the mine, with tributers, whose attention is directed to prospect the Wade, Liverpool, and other reefs, from which a considerable amount of gold has been obtained. 69½ tons of quartz and 26 lb. of picked stone was treated from the mine for a return of 126 oz. 19 dwt. of gold, valued at £348 1s. 10d. Nine men are employed.

Fame and Fortune Mine (Limited).—When Mr. Kersey Cooper took over this property from the Hauraki Golden Age Mines (Limited) in the early part of last year he first carefully examined the different sections of the property, with a view of discovering the best way of systematically developing the mine, and has since done a great amount of prospecting. A crosscut from the low level in the Waiotahi Creek has been driven a distance of 455 ft. under the Pinafore Blow, and connected with the Point Russell level in the Moanataiari Creek, which has given good ventilation. A good deal of work has been done on the hanging-wall leader of the Golden Age reef, and from here a payable quantity of ore was obtained. A rise has been put up on this leader from the crosscut level to the Gladstone level, a distance of 100 ft., and now that good ventilation has been secured prospecting operations on this leader are being more advantageously carried out. The No. 3 reef between the Golden Age and Waiotahi reef has been driven on a distance of 230 ft., two winzes having been sunk on it 70 ft. apart. No. 1 winze is down a depth of 33 ft., and No. 2 40 ft. The latter is being sunk to meet a crosscut drive that is being driven from the Point Russell, from which 70 ft. of backs will be available. The ore that has been treated from the winzes gave a return of a little over 1 oz. to the load. The gold appears to be dipping in a north-east direction, this being partly proved by the improvement that has taken place in the reef as it is being driven on from the crosscut. The country is all that can be desired, and a patch of stone containing the precious metal may be obtained here at any time. 860 tons of quartz was treated during the year for 699 oz. 5 dwt. of gold, valued at £1,889 8s. 3d. An average of twenty-six men have been employed.

A limited amount of gold has been obtained from other small claims in this district—viz., West Coast, Infant, Little Muriel, Little Maggie and Ballarat Claims, which have had from one to two men employed on each.

Victoria Mine.—This company has had partial protection to work with a limited number of men, and the work done has been chiefly accomplished by tributers, who have been working on small leaders varying from 2 in. to 12 in. in thickness, and had 261 tons of quartz treated for 127 oz. 13 dwt., valued at £346 5s. The company have now decided to amalgamate with the Thames Foreshore Claim, with a view to putting down a bore in the latter claim outside of what is known as the "Seaward Slide," to ascertain the class of country, and should it prove favourable a scheme will be devised as to the best method of testing the various well-known reefs at a depth—viz., Shotover, Kuranui, Caledonian, Prince Imperial, &c.

May Queen-Hauraki (Limited).—The Cardigan Special Claim having been acquired by the company during the past year, the property now comprises an area of 231 acres 1 rood, of which 156 acres 3 roods are situated within the Thames drainage area. The Thames-Hauraki Company began pumping operations in January, and in February a start was made to sink winzes in the Saxon section, at No. 6 level, on No. 1 lode and new lode. In March the sinking of the main shaft in the May Queen section was resumed, and continued until a depth of 709 ft. was reached. At this point the new pump ceased to drain the shaft, and in consequence sinking had to be suspended. The sinking was carried out by contract, and, notwithstanding that a substantial bonus was given for every foot over 24 ft. per lunar month, the greatest depth attained in one month was 40 ft., and the average all through was only 31·5 ft. In six months a depth of 190 ft. was sunk, and a large chamber excavated at No. 7 level. Rock-drills driven by compressed air were used in the sinking of the shaft. The shaft passed through alternate bands of ash-rock and andesite lava, both exceedingly close-grained and tough, and, being without heads or joints of any kind, formed shooting ground of the worst description for making rapid progress. There is an old drive from the Queen of Beauty No. 10 level to within 240 ft. of the May Queen shaft, but so dense is the country in that short interval that there is no natural soakage towards the new pump, the pores and interstices in the rock having become filled up with fine silt and sediment. At the present time the bottom of the new pump-shaft is 292 ft. below the May Queen water-level, which further illustrates the impervious character of the rocks dividing the two shafts. From No. 6 level to the surface the size of the shaft is 12 ft. by 4 ft. 6 in., but below No. 6 level it was carried down an average size of 15 ft. by 5 ft., the ladder-way end being increased in size to 6 ft. by 6 ft. to give room for the erection of Cameron pumps to raise the water to No. 6 level (the old pump drainage-level) should the contingency arise. Last December the shaft gradually filled up, and in order to prevent the flooding of No. 7 level one of the 9 in. Cameron pumps was erected, and has been at work ever since. For the first six weeks the water to be lifted did not amount to more than 1,000 gallons per hour, but when the risings and workings on No. 4 and north-west lodes from No. 7 level became connected with No. 6 level the whole of the water flowing along No. 6 level found its way down to No. 7, and at the present time the pump is worked two hours every shift, Sundays included, lifting an aggregate of about 78,000 gallons a day, at a cost of nearly £30 per month for coal and attendance. It is worked by compressed air.

The work accomplished in the different sections of the mine during the year ended the 31st March may be summarised as follows:—

May Queen section: Sinking main shaft, 190 ft.; enlarging chamber at No. 6 level; constructing crosscut to No. 4 and north-west lodes, 366 ft.; driving on No. 4 lode—going east 350 ft., and going west 110 ft.; driving on north-west lode, 150 ft.; rising on north-west lode near junction, 50 ft.; and sinking winzes from No. 6 level, 120 ft. A block of ore 460 ft. long and 110 ft. high has been opened on No. 4 lode, and from the stopes 940 tons of payable ore has been won. Total driving, 976 ft.; winzes, 120 ft.; rises, 120 ft.; sinking main shaft, 190 ft.

Saxon section: A shaft 94 ft., and two winzes on No. 1 lode respectively 65 ft. and 45 ft. deep, and one on new lode 25 ft. deep have been sunk. No. 2 shaft was sunk from a chamber on No. 1 Saxon lode. A rise was constructed above the chamber to hold the head-gear and pulleys, and a crosscut and chamber to hold the winding-engine, which has a pair of high-pressure 6 in. cylinders with 10 in. stroke. The drums are 26 in. in diameter. The engine is actuated by compressed air supplied from the large air-compressor at the May Queen shaft. A 4 in. air-main is carried down the May Queen shaft to No. 6 level, and thence along the drainage crosscut to an air-receiver at No. 2 shaft. The winding-engine was constructed by Messrs. Price Brothers, Thames, and has worked without a hitch since the start. From the bottom of No. 2 shaft a drive has been driven on No. 1 Saxon lode—going west 127 ft., and going east 367 ft. A connection has also been effected with No. 2 winze. From this shaft a crosscut has also been carried southward 518 ft. to Cardigan No. 2 lode. Totals, sinking No. 2 shaft, 94 ft.; winzes, 145 ft.; rises, 60 ft.; driving, 1,012 ft.; engine-chamber, 44 ft. long; and one shaft-chamber 9 ft. long.

Cardigan section: In this section the drive on No. 2 lode has been carried along a further distance of 60 ft. At 40 ft. from the face No. 1 lode met No. 2 lode, and, as it contained a highly payable class of ore, a drive on it has been carried along 130 ft. in a north-easterly direction, with very satisfactory results. The total length of stopes on No. 2 Cardigan lode is 775 ft.—namely, 183 ft. east of No. 6 crosscut, and 552 ft. west.

Altogether some 2,000 ft. of driving and crosscutting and 880 ft. of sinking have been accomplished during the year. Mr. Park, as attorney of his company, has made a satisfactory arrangement with the attorneys of the Thames-Hauraki Goldfields (Limited) to mutually construct the drainage crosscut to connect the Queen of Beauty with the May Queen shaft at No. 10 level. As soon as the drainage-assessment difficulty is settled this work will be undertaken. The completion of this work will be of advantage to both companies; in the first place it will enable the May Queen to suspend pumping on their own account, and start the opening of their No. 8 level, and to the Thames-Hauraki it will bring the solution of the drainage difficulty nearer by causing the large body of water now being pumped by the May Queen to the old pump-drainage crosscut to

run to their new pump, thereby greatly decreasing the cost of the old pump without materially increasing the cost to the new.

Thames-Hauraki Goldfields (Limited).—This property consists of two sections—Queen of Beauty section and Deep-sinker section. The property is owned by the Thames-Hauraki Goldfields (Limited), but will shortly be taken over by the Standard Exploration Company.

Queen of Beauty section: Area, 47 acres. During the past twelve months the sinking of the shaft, which is 20 ft. by 11 ft. over all, has been continued, and is now down a depth of 750 ft., at which point the bottom of the old shaft was reached, so that further sinking will be in solid country. In addition to sinking the shaft, the crosscut leading from the No. 8 chamber at the 540 ft. level has been cleaned out, and retimbered where necessary. This has been done with a view of commencing operations on a large ore-body known as the Vanguard reef. The crosscut from the chamber to the reef is 950 ft., and 620 ft. of this has been already cleaned and repaired. A large amount of CO_2 gas in this drive gave considerable trouble. To procure ventilation a suction-pipe has been connected with the chimney-stack, which is answering admirably. A jet of compressed air, as well as a water-jet, are being utilised so that the work can be proceeded with. At a depth of 595 ft. the shaft was enlarged for a distance of 40 ft. to 25 ft. by 20 ft. over all to provide a chamber for the second set of plunger gear, which is already in position. A coupled horizontal steam-engine, with high-pressure cylinder 18 in., low-pressure cylinder 29½ in., and 32 in. stroke, and supplied with Paxman's automatic expansion gear, has been erected to work the air-compressor to replace the Corliss engine, which proved unsuitable. The whole of the plant—pumping, winding, capstan, and electric—continues to give every satisfaction.

Deep-sinker section: The work in this section was temporarily suspended in December, 1899. For the nine months prior to this the principal work carried on was the extension of the northern crosscut at the 450 ft. level. This crosscut is now in a total distance of 1,299 ft., at which point the drive entered a hard bar, and it was deemed advisable to discontinue the drive further in this direction. The men thus employed were consequently removed to open up the No. 8 level from the Queen of Beauty shaft towards the Deep-sinker property for the purpose of locating and proving the Vanguard reef in this direction. In prosecuting the above work, numerous small leaders and quartz veins were intersected, but no large ore-bodies were met with.

Karaka (Limited).—The work carried on during the year has been the extension of the crosscut at the Collarbone Creek level, which is now in a distance of 1,064 ft. There are two reefs in this property, the No. 1 and No. 2. The No. 1 reef, which is 3 ft. wide, has been driven on for a distance of 200 ft., while the No. 2, which is 4 ft. wide, has been driven on a distance of 450 ft. Both reefs, however, are low grade. The total driving on the No. 1 reef is therefore 900 ft., and on the No. 2 reef 750 ft.

Adelaide Mine.—The only work done by the company has been the repairing of old drives, two men being employed, and three men working blocks of ground on tribute. The leaders operated on were from 4 in. to 10 in. in thickness. 24 tons of quartz was treated for a return of 7 oz. 7 dwt. of gold, valued at £20 6s.

May Queen Extended. — This company had protection to work with two men, who were employed for several months in the early part of the year, the greater part of their time being devoted to driving a series of prospecting-drives, from which no encouraging results were obtained. The principal work now being proceeded with is the sinking of a shaft, which has obtained a depth of 100 ft., the size being 10 ft. by 4 ft., and the management has decided to sink it another 70 ft. before opening out, when crosscut drives will be driven to intersect several reefs which are known to traverse the property. Two in particular are large, and good returns were obtained from quartz broken out at the upper levels. The shaft is being sunk close to the Karaka Creek, and a small plunger pump worked by an overshot wheel is erected. This is continuously worked to keep the shaft dry. The company has a twenty-two-stamp battery and thirteen berdans, which have been employed for the greater part of the year in crushing quartz from various mines in the district, the mode of treatment being the ordinary wet-crushing and amalgamating process.

Occidental.—This mine has been partially under protection, the Warden having granted the company permission to work with a limited number of men. The North Star low level has been extended a distance of 350 ft. on the course of the Hague Smith reef, and has now been driven a total distance of 1,500 ft. The drive is now penetrating a good channel of country for gold. There are four gold-bearing lodes traversing the length of the property, varying from 1 ft. to 35 ft. thick, in which rich deposits of gold were obtained in the upper levels, and the developments in progress are for the purpose of ascertaining their thickness and value at the lower levels. An average of four men have been employed. 52 tons of ore was treated for 27 oz. 5 dwt. of gold, valued at £74 6s. 5d.

Fortuna Mine.—This mine was worked vigorously in the first part of the year, twenty-five men being employed. The work was chiefly confined to working the reef at No. 2 and No. 3 levels, which varied from 1 ft. to 4 ft. in thickness; but, as the yield of gold obtained from the quartz treated that was won from the No. 3 level did not prove payable, operations here were stopped, and the water allowed to rise to the No. 2 level. Trial crushings were also taken from the reefs at No. 2 level, and, as payable results were not obtained, another attempt was made on the reef at No. 3 level, but with no better success, and the mine was shut down. 514 tons of ore was treated at the company's mill for 116 oz. 8 dwt. of gold, valued at £251 2s. 3d.

Ethel Reef Gold-mining Company (Limited).—This company holds the following mining areas at Hape Creek, Thames: Anchor Special Quartz Claim, 96½ acres; Lord Nelson Special Quartz Claim, 36 acres. Also an option over the Mascotte Special Quartz Claim, 57 acres. Up to the present the chief work has been done on the Anchor Claim; the only work in connection with the Lord Nelson Claim is a crosscut adit, being driven to intersect the Lord Nelson reef. This

crosscut is now 627 ft. long, and it is expected that the reef will be cut at about 800 ft., at a depth of 270 ft. from the surface. There are several reefs traversing the Anchor ground, the chief one being the Jupiter, which in places is 40 ft. wide, carrying quartz heavily mineralised with iron-pyrites, sulphide of antimony, and zincblende. The quartz on the average is too low grade to work, but the reef has branches which in places carry very rich ore, the gold being found generally and plainly visible in the stone. Besides the Jupiter reef there are leaders of the specimen class that have been more or less worked. The Stevenson's leader is 6 in. to 18 in. wide, and carries very rich ore; Prescott's leader is from 4 in. to 8 in. wide, and carries very rich ore, but heavily mineralised; the September leader is 2 in. to 10 in. wide, and carries specimen ore. The Anchor is opened by five crosscut adit-levels, the Anchor level being the main working-level. This cuts the reef at 450 ft. in and 295 ft. vertically below the surface. The following mine-work has been done during the year: Anchor and Mascotte—Driving on reefs and leaders, 1,628 ft.; sinking, 104 ft.; rising, 153 ft.; crosscutting, 506 ft.; stoping, 306 ft. Lord Nelson—Driving on reefs, 65 ft.; crosscutting, 627 ft. The company own a small testing plant of four stamps, and a ten-head stamp-battery in the course of construction. 374 tons of quartz was treated at the company's mill for 116 oz. 3 dwt. of gold, valued at £303 3s. 8d. An average of thirty-two men have been employed.

Kirikiri.

Fleming's Mine.—This mine has been continuously worked during the year. Operations have been carried on in both the Horse-shoe and Filly sections of the property, where a good deal of work has been done in prospecting and developing the various reefs and leaders, which vary from 1 in. to 10 in. in thickness, and from which 54 tons of quartz was broken out and treated at the four-stamp battery for a return of 139 oz. 18 dwt. of gold, valued at £384 14s. 6d. Six men were employed.

Puriri Gold Estates.—This company was formed in London two years ago to take over the claims known as the Beresford, Perseverance, and others, comprising an area of 224 acres, situated on the western fall of the main range, and distant about two miles from the Township of Puriri. A main level was started for the purpose of cutting a large reef outcropping on the Mandoline section, but when it had advanced 133 ft. extremely hard country was met with, and in consequence this work was discontinued and the mine protected for a time. When the protection expired operations were directed in starting No. 1 level higher up the hill than the former level to intersect the same reef, and is in a distance of 475 ft. Three small reefs were intersected in this level, ranging from 8 in. to 2 ft. The first proved to be a portion of the large outcrop referred to, and was driven on westward for a distance of 183 ft. The reef widened out to 4 ft., and assay-tests of the stone gave as much as £2 9s. per ton. Driving has now been commenced on the same reef from the crosscut east. A crushing of 20 tons from the 2 ft. reef proved disappointing, as the bullion obtained was only worth £10 19s. 6d. Various other prospecting-works have been done on the property, but so far no payable quartz has been obtained. An average of seven men have been employed.

Orion Mine.—This company was formed in June last to take over the Lucky Chance Special Claim (late Joker), and previous to its formation a very large amount of prospecting-work had been done on the property. Three levels were opened up, and two reefs driven on for a distance of 2,500 ft., the reefs varying from 18 in. to 5 ft. in thickness. Since the formation of the company an aerial tramway, hoppers, &c., have been erected for half a mile in length, from the mine to the battery, at a cost of £750, which has considerably reduced the transport of quartz to the mill. When this was completed 207 tons of quartz was treated for 59 oz. 3 dwt. of gold, valued at £131 18s., which has been very disappointing.

Miner's Right Claim.—This mine has been continuously worked during the year with four men, the work consisting of driving and stoping on small leaders, varying from 2 in. to 6 in. At the surface adit-levels 92 tons of quartz has been treated for a return of 137 oz. 5 dwt. of gold, valued at £350 15s. 1d., which is considered payable for the time they were in getting it out.

Omahu.

Sheet Anchor.—This claim was taken up by Tilsley Brothers, and has been worked with from four to six men. The reef is from 4 ft. to 5 ft. thick, and test crushing at the School of Mines has given excellent results. The reef has very little underlie, the deepest covering on it, so far as it is proven, being not more than 30 ft. There is a large amount of clay and quartz mixed on the outcrop, which contains a fair percentage of gold that they consider will pay to crush. A two-stamp battery was erected, with the necessary amalgamation appliances; but this has not turned out a success, and they now propose erecting additional stamps, &c. 33¼ tons of quartz has been treated from this mine for 291 oz. of bullion, valued at £202 8s. 5d.

Klondike Mine.—From time to time a good deal of surface-prospecting has been done on this mine, which was formerly known as the Nancy. Good dish-prospects can be obtained from the loose soil on the surface, and in one of the trenches there was the formation of a 3 ft. reef, but this was not what could be called quartz, as it was hard country-rock, with iron seams running through it which contained a fair percentage of gold. Two and sometimes three men have been employed.

Golden Belt Mine, Neavesville.—This property consists of the Golden Belt, Venus, and Golden Arrow, and comprises 36 acres. A battery is erected on the mine, which includes thirty head of stamps, nine berdans, and other necessary appliances for the treatment of the ore by the ordinary process—wet crushing and amalgamation. There has only been a limited amount of work done on this property for the last twelve years. Four levels have been driven, and the reef stoped out for about 400 ft. in length. A low level has been driven for a distance of 580 ft., and this has to be

extended a further distance of 150 ft. to intersect the reef. Since this company was formed the work has chiefly been confined to opening up and repairing the levels, which they hope soon to accomplish. This is being done with a view to opening up the reef, some of the shareholders being confident that with good management the mine can be made to pay handsomely. Seven men are employed.

TAIRUA DISTRICT.

Broken Hills Mine.—This property, on which a considerable sum of money was spent by a former company in machinery, prospecting, &c., was put up for sale by public auction, and was purchased by Mr. H. H. Adams on behalf of a syndicate, who at once formed it into a company, and lost no time in commencing operations in the development of the mine and the erection of a crushing plant. The first work consisted in opening up the large reef which was cut through at No. 2 level by the former company, and on which comparatively little work was done. A drive was carried along north and south from the crosscut on the hanging-wall portion of the lode, the lode being cut through in several places as the drive proceeded, to ascertain its width and value. It was found to be from 26 ft. to 30 ft. in thickness, and from assay-tests made of the ore from time to time it was considered of a payable quality, and the new twenty-stamp battery that was purchased with the mine was erected, and crushing was commenced in the month of February, the mode of treatment being the ordinary wet crushing and amalgamation. After a trial crushing of 600 tons had been put through the mill for the return of 196 oz. of bullion, valued at £287, it was found by assay-tests that only a small percentage of gold was being extracted from the ore, and it was at once decided to stop crushing for a time and erect vats, &c., for the treatment of the tailings by the cyanide process. This work is now in progress, and should be completed in two months' time. In the construction of the plant provision was made in the building and foundation for an additional twenty heads of stampers in the event of their being required. The plant is at present driven by steam-power, as the company were desirous of proving the value of the mine before constructing a water-race for the purpose of driving the machinery by water. In the mine work has been chiefly confined to opening the reef up at No. 1 and No. 2 levels, which are connected with rises for the ore to be passed down to the No. 2 level, which is also connected with the battery incline tramway, and the rises have also been the means of giving good ventilation in the upper portions of the mine. The No. 3 level crosscut is also being extended to intersect the reef at a depth of 70 ft. below the No. 2 level, and it is expected the lode will be met with in this level in about another 80 ft. of driving. When intersected, a connection will be made with the higher workings, and the quartz will then be conveyed down the passes to this level, and thence to the battery.

An average of thirty-five men have been employed since operations were commenced.

Chelmsford.—This claim is situated on the Pakirarahi No. 1 Block, on the Kauri Timber Company's lease, and about ten miles above the Tairau upper landing. There was some prospecting done on and around this property, and an option was held over the ground for a time; but when this was given up the promoters of the Chelmsford Company made favourable terms with the Kauri Timber Company, and commenced systematic prospecting on the ground, and in a short time discovered highly payable ore. The directors at once purchased a ten-stamp battery, and three Fraser grinding- and amalgamating-pans, which are now in the course of erection. The motive-power will be water, diverted from a number of small creeks in the immediate vicinity of the mine, the longest branch race being 98 chains, and the fall 330 ft. Five distinct lodes have been discovered, varying from 1 ft. to 4 ft. in thickness, and running parallel to each other, striking nearly north and south, with an easterly underlie. Good assay-tests have been obtained from the different lodes, and 1 ton treated at the School of Mines, Thames, gave a return value of £13, whilst another ton gave £5 10s. Work in the surface-drives on the reefs has been stopped for the present, and a main level is now being extended on No. 1 reef; in the face the reef is 4 ft. thick and of a highly payable character. The country is of a favourable description, and, are there a good facilities for working the mine, the prospects of the company may be considered very encouraging. Eight men are employed in this mine.

Prospecting operations are also carried on in the Gem, Mysote, Ivanhoe, Glencoe, and Golden Hill Claims, from one to three men being employed on each of them. A fair amount of work has been done for the number of men employed, and reefs have been discovered, from which good dish-prospects are obtained.

WHAREKAWA DISTRICT.

Whangamata Gold Co-operation (Limited).—This company has an area of 306 acres, and the mine is under the management of Mr. Hugh McLiver. Operations in the mine have been vigorously carried on during the year, and crushing operations were commenced in June last. Since that date the monthly returns show a steady rate of bullion production. The main reef in the mine has been opened up to a considerable extent from three different levels, which prove it to a depth of over 300 ft. below the crown of the hill. The bulk of the ore treated up to the present time is obtained from the stopes over the back of No. 1 and No. 2 levels, where a payable chute of ore about 300 ft. in length is being operated on. The average width of the reef in these levels is about 5 ft., and it is very easily mined, little or no explosives being required in breaking the reef. Since the connection was made between the shaft and the No. 3 adit-level no pumping or winding is required in the mine, as all the ore is now passed down and along this level to a hopper connected with a horse-tram to the battery. This connection is also an outlet for the drainage of the mine. This crosscut is about 1,400 ft. in length, and was driven from both ends, and at present is being extended as a prospecting-tunnel from the bottom of the shaft in an easterly direction, with a view of intersecting any parallel ore-bodies that may traverse this section of the property. In this level the main reef has also

been opened up both north and south of the crosscut, and a limited amount of stoping done. The country is considerably tighter than in Nos. 1 and 2 levels. The reef is of a harder nature and is split up in places, the country-rock intervening. Prospecting operations are proceeding on the eastern section of the property, where a small reef from 4 in. to 5 in. in thickness was discovered near the surface, and from which good payable stone was obtained. A drive is now being put in from this side of the hill to cut it at depth. The length of the tramway between the mine and battery is 37 chains, 10 chains of which is worked by hand-power at a higher level, and from here it is passed down a short shoot to a hopper on the horse-tram, which is 27 chains long. The battery comprises two Krupp mills and a third in course of construction, twelve large percolating-vats 20 ft. diameter and 4 ft. deep, two solution-vats, and one mixing-tank, two rotary furnaces, two stone-breakers, four automatic feeders, six berdans, table, and copper plates, &c. The mill is driven by a 6 ft. diameter Pelton wheel, and a 3 ft. diameter Pelton wheel for the electric plant to supply light for the mill. Water is used as a motive-power to drive the machinery. A water-race (most of which is wooden fluming) has been constructed for a mile and a quarter in length, 4 ft. by 2½ ft. deep. During the year 5,495 tons has been crushed for a yield of 8,605 oz. of gold, valued at £10,610 13s. 4d. There were 115 men employed.

Newton Mine.—Prospecting operations have been carried on for some time in this ground, and the outcrop of a reef discovered in the surface-workings, some of which (it is stated) gave encouraging prospects. Two men are employed on behalf of Mr. H. D. Abbott in driving a level from the side of the hill to intersect the lode at a depth.

Ohui District.

Mining on this part of the field is at present at a standstill. A little work was carried on in the beginning of the year on the Mercia Claim by T. P. Seaver, but nothing of a payable character was discovered. Prospecting operations were also carried on by E. Ryan and others around this locality, but with little success.

Whangamata District.

Wentworth Mine.—This mine is owned by the Hauraki Peninsula Exploration Company, who have done a good deal of work during the year in opening up the mine and carrying on necessary outside work. In the mine the reef has been opened up in four different levels, and it varies in size from a few inches to 4 ft., giving an average width of about 20 in. In the No. 1 level the reef has been driven on from the one side of the spur to the other side, a distance of 420 ft. A winze has also been sunk on the reef from this level to the No. 2 level, a depth of 80 ft., where the reef has also been opened up to a fair extent. Through the block being too big to conveniently work between this level and the present low level, an intermediate or No. 3 level was put in to split the block which intersected the reef, and a rise was put up on the reef to the No. 2 level, a height of 76 ft., so that all the ore coming from the mine for some time will pass through the No. 3 level, which is connected by a wooden shoot with the tramway-hopper erected at the low level. In the No. 4 level the reef has also been intersected and driven on some distance, it being intended to make a connection between this level and the No. 3 as soon as possible, so that it can be used as the permanent outlet for conveying the ore from the mine to the battery, this being on the same level as the horse-tram. The battery which is being erected by the company is drawing towards completion, and it is expected that crushing will be started in the course of a few weeks. For crushing purposes a Lamington ball-mill, which the company have had on hand for some time, is to be tried as an experimental plant, but provision has been made in the erection of the building and foundations for the adoption of stamps should the ball-mill not prove a success. The water-race, which is completed 67 chains in length, has an effective fall of 285 ft., pressure-pipes being 14 in. in diameter. The tramway is also completed from the mine to a spur on the opposite side of the creek to the battery, a distance of about 23 chains, where a hopper is erected, in which the ore will be tipped and sent over the creek to the battery by a short wire tramway.

Maratoto District.

Hikutaia Gold Syndicate.—The work in the mine has been limited for the greater part of the year, the company's operations being directed more in the treatment of the ore that had been won from the mine and stacked on the surface. A No. 5 Dodge crushing plant (equal to five stamps), cyanide-vats, &c., was constructed, and 1,739 tons of ore treated for 570 oz. of bullion, valued at £650 13s. 5d. As there is abundance of quartz in sight, the ore referred to was treated without selection, the object being to ascertain the average value of the ore in the winze with a view to erecting a large crushing plant. The quantity of ore that was to be treated on this small scale having been put through, the plant is stopped pending instructions from the directors. An average of eleven men were employed.

Maratoto Gold-mining Company.—In the Pay Rock section of this mine the No. 1 level has been driven northwards a distance of 100 ft. along the hanging-wall of the lode, which has been broken out to an average width of 5 ft. without any sign of the foot-wall. For the first 30 ft. of driving, ore very rich in gold and silver was met with, and beyond that point, so far as the exploration has gone, the ore is all payable. Below this level, No. 1 winze has been sunk to a depth of 85 ft., where it connected with the No. 2 level workings. This winze went down on the hanging portion of the lode, which was taken out to an average width of 3 ft. The rich ore-shoot was followed to a depth of 20 ft., when it dipped out of the winze to the southward. Over the back of this level a rise has been put up to a height of 90 ft. on the hanging-wall portion of the lode, and another 10 ft. of rising will hole through to the surface. Beneath the floor of this level, No. 2 winze has been sunk to a depth of 55 ft. Here the lode has been broken out to a width of 4 ft.

without any indication of either of the walls, and the average assay-value of the ore is £2 10s. per ton. No. 3 winze has been sunk to a depth of 21 ft. below No. 1 level on the hanging-wall portion of the lode, which has been broken out to a width of 2 ft., and the average assay-value of the ore is £2 per ton. The three winzes above mentioned are located at stated intervals apart for a length of 500 ft. along the line of the lode. The No. 2 level has been extended in a southerly direction for a distance of 320 ft. through a belt of hard calcite, which necessitated the constant use of explosives, and progress has been very slow in consequence. At present there are indications of improvement, and a few feet more driving should bring about the desired results. Above this level 60 fathoms of stoping has been accomplished, and the whole of the ore broken out therefrom has been saved for treatment. From this block of stopes 22 tons of ore has been selected and shipped for sale to the smelting-works, Dapto, New South Wales. The average assay-value of this ore was £17 16s. per ton, and the net results obtained from the sale of the whole lot was £308.

In the Maratoto section of the mine two distinct blocks of ore have been opened up, and here there is a large tonnage available for stoping operations. For ore-transport purposes a surface-tramway of 12 chains in length has been constructed in order to connect with the Pay Rock section, and thence, through the medium of a pass 90 ft. in depth, with the mill tram-line. The company has also erected a new mill, which comprises one No. 2 Gates crusher, three Challenge ore-feeders, fifteen heads of stamps, two berdans, and a complete cyanide plant. The motive-power is water, with auxiliary steam supplied by a 30-horse-power portable engine when there is a deficiency in the water-supply. The ore is crushed wet in the mortar-boxes, then passed over amalgamating-plates to take out the coarse gold, and then through the automatic distributers into the vats for cyanide treatment. Twenty-three men have been employed during the year at the mine and mill.

Waitekauri Extended Mine.—Operations in this mine have been vigorously proceeded with during the year, the work being chiefly confined to developing and stoping on the main reef at the low and intermediate levels. In the low level the reef has been opened up for several hundred feet north and south of the main crosscut, and has varied from 16 ft. to 30 ft. in width. In the intermediate above the low level the reef has also been opened up to a considerable extent, timbered throughout, and shoots put in ready for stoping. The intermediate is driven from a rise, which is put up to the No. 2 level a height of 280 ft. In the low level 320 ft. south of the crosscut, a large chamber has been cut out on the hanging-wall side of the reef for the purpose of erecting pumping and winding machinery, it being the company's intention to sink a shaft for the purpose of working the reef at a greater depth than can be obtained by adit-levels. There have been two winzes sunk on the reef from this level, about 300 ft. apart, to a depth of 47 ft., and the ore is improving in the winzes as far as they have been sunk. A water-race is in the course of construction, and when finished the water will be brought in and used as a motive-power to drive an air-compressor, from which air will be taken to drive pumping and winding machinery. The water will be conveyed down a pass to the low level in pipes. The effective fall will be 263 ft. As considerable alterations have been made in the crushing plant, and as there has been a scarcity of water during the summer months, only a limited amount of ore was treated during the year. 2,751 tons of quartz was treated for 2,997 oz. 13 dwt. of bullion, valued at £3,002 9s. 1d. An average of forty men were employed.

Prospecting operations have been carried on in the Volunteer and Retreat Claims with two to four men, the reefs being operated upon, but no returns of gold have been made.

Komata.

Komata Reefs. — The mining areas held by this company comprise the Komata Reefs Special Quartz Claim, 79 acres; the Komata Consolidated Special Quartz Claim, 100 acres; the Komata Extended Licensed Holding, 30 acres; and the Triumph Special Quartz Claim, 75 acres. These claims are adjoining each other, and a main low level is being driven for the purpose of intersecting the reefs at a depth which will give every facility for working the whole block of ground. This drive is 300 ft. below the next lowest level, where the reef has been stoped out. The tunnel is being driven with large rock-boring machines, two of which are working in the face at the same time. The size of the drive is 7 ft. 6 in. by 7 ft. 6 in, and one tram-line is laid down, but there is ample room for a double line should it be required. It has been driven a distance of 1,504 ft. during the year, and is now in a total distance of 2,404 ft. There is yet, however, 346 ft. further to drive to intersect Wilson's reef, which is the chief gold-producer. The tunnel penetrates for some considerable distance through extremely hard undecomposed andesite. The Komata Reefs Special Quartz Claim is where the chief work has been done up to the present, having produced about thirty thousand pounds' worth of gold from 9,000 tons of ore. The reefs are well defined and moderately large. The most important are—Wilson's lode, 2 ft. to 5 ft. wide, carrying a loose friable quartz containing free gold and sulphide of silver; Lavington's lode, 5 ft. to 15 ft. wide, carrying similar quartz to Wilson's lode, but of a lower value; Hartridge's leader, 8 in. to 18 in. wide, carrying more compact quartz of very good value; but most of the bullion so far obtained has been extracted from the quartz won from Wilson's lode and Hartridge's leader. During the year 1,940 tons have been treated for 4,409 oz. 17 dwt., valued at £6,614 15s. 6d.

Karangahake.

Woodstock.—This company's property is cut in halves by the Waitawheta Stream and Gorge, which traverses it in an easterly direction, and mining operations up to the end of December last were confined to that portion of the property lying to the south of the Waitawheta, which has been worked in all the six levels driven on the Maria lode, and from which 12,000 tons of ore has been broken and treated. Since then all stoping has been stopped, and development and mainten-

ance work only has been carried on. The development of Taukane Hill to the north of the Waitawheta Gorge is now being steadily prosecuted. This section in years past yielded a considerable quantity of good ore from the small superficial workings then undertaken. Since then very little development work has been done in opening this auriferous section. Now Nos. 1, 3, and Tramway levels, 435 ft., 270 ft., and 73 ft. respectively, above the Waitawheta Stream, are being pushed ahead into the hill in a northerly direction to intercept the main ore-shoot, from which the above-mentioned high-grade ore was taken; and the necessary connections between these levels are being made for ventilation, manways, ore-passes, &c. Good ore is now being obtained here. At the same time, Nos. 4 and 5 levels, Maria lode, in the southern section of the property, are also being pushed ahead southerly to open up new blocks, and the operations on the reef in this direction proved even better than was anticipated. A crosscut is also being driven from No. 4 level to intersect Shepherd's and other lodes lying to the west of the Maria lode. The actual amount of work done in the mine during the year ending the 31st March, 1900, is as follows: 1,073 ft. of driving, 85 ft. of sinking (winzes), 76 ft. of rising, and 888 fathoms of stoping. The ore treated during the year has been taken from the Maria reef. The question of sinking below river-level to develop the lower levels of the Maria, Shepherd's, Woodstock, &c., reefs, and also the lower portions of the Crown reef, which dips into the Woodstock property, is now under consideration. The treatment now, as mentioned in a previous publication, consists of reduction of ore by two Blake crushers and forty stamps; concentration by means of sixteen Union vanners, and hydraulic sizers; separation of slimes from general tailings, which latter are then cyanided in percolation-vats. The slimes are concentrated by peripheral overflow discharge-settlers, and treated with cyanide by agitation and decantation. The concentrates are being treated at the mill very successfully by means of agitation with cyanide. 11,454 tons was treated for 14,931 oz. of gold, valued at £13,500 2s. 10d. An average of 114 men were employed.

New Zealand Talisman.—This company's mine is opened up by seven adit-levels driven from the side of the hill, the lowest being 900 ft. below the outcrop of the reef on the surface near the top of the hill, and the levels have been driven on the reef from 800 ft. to 1,200 ft., the reef varying in size from 1 ft. to 12 ft. in thickness. The whole of the stuff is sent direct to the battery for treatment as it is won from the mine. The operations in the mine have been chiefly confined to driving and stoping on the reef, 9,558 tons being produced for 45,795 oz. 10 dwt. of bullion, valued at £33,028 14s. 4d., an average of 105 men being employed. The crushing plant consists of twenty head of stamps and one Krupp mill, together with all necessary appliances for the treatment of the ore by the amalgamating and cyanide process. In view of an amalgamation that will shortly take place with the Talisman Extended, an additional fifty head of stamps are about to be erected. Also another important work is to be started in the opening-up of the low level from the level of the horse-tramway that leads into the battery.

Talisman Extended.— This property now includes the Royal Mail, the Crown Extended, the Victor, and Waihau, and comprises 199 acres. It is bounded on the south-west side by the New Zealand Talisman, and on the south by the Crown Company's mine. The above claims were worked separately until the 1st February last, when they were amalgamated and formed into what is termed an English company, and named the Talisman Consolidated Gold-mine (Limited). As this mine lies southward of the principal mines in the Karangahake district, the prospects of meeting with payable ore may be considered encouraging. The London and N.Z. Exploration Company (the former owners) have expended a large sum of money in developing-works with a view of thoroughly testing the property. Two low levels are being driven, one from the west side and the other from the east of the hill, a distance of 4,000 ft. apart, and are being driven to meet. This will prove a large belt of country, and 600 ft. below the surface; also the Crown Mines Main Lodes No. 1 tunnel is in a distance of 1,350 ft., and a reef formation has been penetrated through near the face of the drive for a distance of 40 ft., and some of the quartz tested has given encouraging results. The No. 3 tunnel west has been driven a distance of 1,000 ft.; it is penetrating a favourable class of country for the existence of gold-bearing lodes, and one of the well-known reefs is daily expected to be intersected. No. 4 level has been started 1,200 ft. west of No. 3 tunnel for the purpose of cutting a lode formation discovered on the surface. This drive is now in a distance of 400 ft., and another 50 ft. of driving will cut the lode 200 ft. below the outcrop. North of No. 1 tunnel a crosscut has been driven, and the Dubbo reef intersected, and driven on for a distance of 170 ft. It is about 5 ft. in thickness, and assays from time to time have proved the quartz to be of a payable character. South-west of No. 1 tunnel, a strong lode, which varies from 3 ft. to 7 ft. wide, has been driven on on its northerly course for a distance of 300 ft., and two winzes have been sunk to a depth of 70 ft. These operations have proved the lode to be gold-bearing both in driving and sinking, and also that it improves in appearance with depth. In addition to the workings mentioned above, there have been a number of men employed on surface-prospecting and in testing the different outcrops of lode formation located on the surface, and in a number of cases good prospects have been obtained. The average number of men employed during the year was forty-two.

New Zealand Crown Mine.—Operations in this mine have been vigorously carried on during the year: they consist in driving, stoping, &c., on the reef from the No. 6 (or Waitawheta) level upwards, and from here a large tonnage of high-grade ore has been obtained. Good progress has been made with the sinking of the main underlie shaft, which has now attained a depth of 240 ft. below the No. 6 adit-level. From this shaft three levels have been opened out at a depth of 70 ft., 140 ft., and 210 ft., and driven on in a northerly and southerly direction on the course of the reef for a considerable distance. The reef maintains its size, varying from 4 ft. to 14 ft. in thickness, and is said to be even better in quality than at the upper levels. Two Tangye pumps worked by compressed air have up to the present been sufficient to cope with the water under the No. 6 adit-level, but a new pumping plant is expected shortly to arrive from England, and will be put in

position in the No. 1 underlie shaft, and thus replace the Tangye pumps now in use. This plant will be capable of dealing with any water that may be met with in the lower workings for some time to come. A considerable improvement has been made in the tramway between the mine and the battery. At a point opposite the Talisman cyanide plant a deviation has been made, and an easy grade made to the company's mill, a horse now being able to take eight trucks to the mill instead of one, and three horses doing as much as seven formerly. The tramway terminates on a level with the ground-floor of the battery, and the trucks of quartz are hoisted up an incline tramway on the outside of the crushing plant up to the rock-breaker with an engine erected near the bottom of the incline. The returns for the year ending the 31st March were 33,171 tons crushed for 37,455 oz. 15 dwt., valued at £71,185 12s. 9d. An average of 230 men were employed.

Imperial Mine.—The company has continuously worked the mine during the year, employing from five to nine men. The reef is 2 ft. in thickness at the low level, and has been driven on 246 ft. through very hard country. Assays made from time to time of the stone have given as much as £5 per ton, but most of the ore is low grade. There have also been a considerable amount of surface driving and prospecting done, amounting to 462 ft. of driving, 45 ft. of sinking, and 38 ft. of rising on the reef, also 336 ft. of crosscutting. No returns.

Prospecting operations are also carried on in the Shotover Claim, which is situated on the south side of the trig. station, where several rubbly formations have been discovered, from which good prospects of loose gold were obtained; but nothing properly defined has yet been opened up. An average of four men have been employed. No returns.

Ohinemuri Syndicate.—This company found it necessary to stop all work at No. 1 level of the pump-shaft for a time for the want of funds, and partly on account of no payable ore being discovered at that level; but, as rich ore was obtained on the surface-levels, the shareholders are still confident that payable ore will be found at depth, and contemplate sinking the pump-shaft another 200 ft. The work is now confined to extending the Elliot tunnel, which is in 1,700 ft., and another 800 ft. will yet have to be driven to reach the supposed line of reefs, no reefs having yet been cut in this tunnel. An average of fifteen men have been employed.

Rising Sun Mine.—Prospecting operations are also carried on in this mine with two men, who are employed in extending the No. 2 level for the purpose of intersecting the reef which has been opened up in the higher levels (and on which a winze has been sunk to a depth of 48 ft.). It is expected to intersect the reef at this lower level in about another 90 ft. of driving. Average width of reef, 3 ft. No returns have been made during the year.

Waitekauri District.

Waitekauri Mine.—The following development-works have been carried out in the various sections of this company's property: At the Golden Cross section there are two shafts. The work of sinking both these has been continued, No. 1 shaft being down 510 ft. below the level of the sill of No. 2 shaft. From No. 1 shaft the work of opening up the Nos. 2 and 5 levels on the reef has also been continued, while at No. 4 level the reef has been cut, and driven on for a distance of over 600 ft., and a branch reef has been met with and is being exploited. At No. 2 shaft crosscutting is in hand at No. 4 level, 352 ft. below surface. The both shafts are fitted with efficient pumping and winding machinery and all the necessary plant. Work at the Golden Cross low-level tunnel is being pushed on by rock-drills. This will connect with the No. 1 shaft at 420 ft. below the surface, and will prove a good adit-level, besides prospecting the country between its mouth and the No. 1 shaft, a distance of 6,200 ft. At the Komata section a shaft is being sunk, and is down 323 ft. below surface, and crosscutting to the reef at No. 3 level, 300 ft. below surface, will be undertaken. Work in opening up No. 2 level on the reef system has also been done, and efficient winding machinery is being erected. The driving of the low-level tunnel from the Grace Darling Creek right under the hill to connect with this Te Ao-Marama property is being pushed ahead, and the total length of the tunnel when completed will be 4,275 ft. This will prospect the whole of the properties between the Grace Darling side of the range and the Komata side, and will also afford an outlet to the battery for the quartz from the Te Ao-Marama reef system. The tunnel is being driven by rock-drills, and good progress is being made. At the old Waitekauri Mine work on the reefs has been done at the Queen, Smithy, and other levels, and some good-grade stone disclosed. From the outline of operations of work done on this company's properties it will be seen that they are of an extensive character, there being no less than five distinct points of the property in which work is being vigorously carried on, and as these advance they will lay open and prospect a large tract of country. The battery has been converted from dry to wet crushing, and, as will be manifest from the returns sent monthly, the ore won and treated is fully up to average value. During the year 27,402 tons of ore was crushed for 74,531 oz. of gold, valued at £80,468 14s. 7d., an average of 345 men having been employed during the year.

Jubilee Mine.—During the past year this mine has been worked on tribute by Mr. R. Worth and party, who took over the mine and battery for a period of twelve months, and had a good deal of work to do in repairing the No. 1 and No. 2 levels (from which their operations were carried on) before stoping could be proceeded with on the reef, which was opened up to a fair extent in these levels, and varied from 6 in. to 2 ft. in thickness. Their operations were principally confined to stoping. During the year 1,081 tons of quartz was treated at the battery for a return of 681 oz. of gold, valued at £1,644 18s. 1d. An average of fifteen men were employed during the year.

Waitekauri Cross Gold-mining Company (Limited).—Operations in this company's mine were suspended for a short time, pending the arrival from Home of some duplicate parts of the triplex-action electric pump, used for pumping the water out of the shaft, from which operations are carried on to open up and prove the value of the large ore-body at a greater depth than can be obtained by adit-levels. Through these parts of the pump going amiss, and

not being able to replace them in the colony, work was stopped, and the water allowed to rise, but they have since arrived, and work has been resumed. The principal development-work carried out in the mine during the year has been the driving of a level on course of the main reef a distance of 300 ft. Several crosscut drives have been put in through the reef to ascertain the width of lode, which proves to be fully 40 ft. wide. This level has been opened out from an underlie shaft, sunk on the reef a distance of 160 ft. below chamber, which is opened out from the lowest adit-level. It is intended to sink this shaft a further distance to 300 ft., where another level will be opened up. Motive-power is derived from two powerful dynamos, which are driven by water, and are situated about two miles from the mine. About sixteen men are employed.

Grace Darling Mine.—Operations in this mine were suspended during the greater part of the year, pending the erection of a ten-stamp battery, with cyanide plant and water-race, which was completed in February, when crushing operations were started and work resumed in the mine. The present work in the mine is confined to stoping on the main reef in the Grace Darling section over the back of the No. 2 level, where it has been opened up to a fair extent, and varies from 2 ft. to 5 ft. in thickness. In the No. 3 level, 100 ft. below the No. 2 level, the reef has been intersected, and it is intended to connect this level with two winzes which have been sunk on the reef from the No. 2 level, a depth of 50 ft. and 70 ft. In the Portsea section of the property driving and rising operations are proceeding on the reef. The battery which has been erected by the company at present consists of ten head of stamps, but in the erection of the plant provision was made in the building and foundations for another ten head if required. The mode of treatment adopted is wet crushing, amalgamation, and cyaniding. An auxiliary steam-power has also been erected for running the mill in dry weather, when water is not obtainable as a motive-power. Steam will be supplied by a Babcock and Wilcox boiler of 85-horse power, and a Tangye single engine of 65-horse power. These will be capable of running the full plant, including the extra ten head of stamps, &c., should they be erected. The reduction and cyanide plant consists of ten head of stamps of 1,050 lb. each; one 4 in. Gates ore-crusher, with automatic feeders for the stamper-boxes and amalgamating-tables; two spitzlutens for separating the slimes; three percolating-vats, 20 ft. in diameter by 8 ft. deep; three settlers, 17 ft. in diameter by 8 ft. deep; two sumps, two storage-vats, and two precipitating-boxes. The only return for the year was 295 tons of ore crushed at the new battery for a yield of 96 oz. 15 dwt. of gold, valued at £120 18s. 9d., which is rather disappointing, as better returns were anticipated. An average of thirty men were employed during the year.

Alpha Mine.—Operations in this mine have been continuously carried on during the year. The erection of the battery was completed in the early part of the year, and crushing operations were commenced in June. After putting through 965 tons of ore (which was cleaned up in the month of August for a return of 652 oz. 8 dwt. of bullion, valued at £710 17s. 11d., which was very disappointing, not being sufficient to cover expenses), the plant was closed down, and further prospecting operations carried on in the property; but so far nothing new of a payable nature has been opened up. The work is chiefly confined to the No. 4 level Alpha section, and Rainbow section on the western side of the hill. Eight men have been employed during the year.

Young New Zealand Mine.—Prospecting operations have been steadily carried on in this ground during the year, with from two to five men employed. At present their attention is directed to extending the low level to intersect the reef at a depth below the higher workings, where the reef has been operated on to a fair extent, and from which good returns were obtained in the early days. It is expected the reef will be met with in about another 60 ft. of driving, when it is anticipated payable ore will be opened up.

Huanui Mine.—Work in this mine is at present confined to driving on the reef from the main low-level crosscut, which is in a distance of about 700 ft. The reef varies from a few inches to 2 ft. in thickness, and occasionally a little gold is seen in the stone, but no returns of gold have been made during the year. At present only two men are employed.

Waitekauri King Mine.—A fair amount of work had been done in this mine during the early part of the year by the owners in prospecting the ground and opening up some of the reefs discovered on the property, but, not finding anything that was considered payable, the mine was let on tribute to A. Campbell and party, who broke out and treated 8 tons of quartz at the Thames for a return of 12 oz. 3 dwt. of gold, valued at £24 4s. 7d.; but as the expenditure in getting the quartz to a battery for treatment was so great it was considered not payable. An average of four men were employed.

Prospecting operations are also carried out in the Diamond Gully and Eclipse Claims, with from one to two men on each.

Waihi District.

Waihi Gold-mining Company.—Work in this company's mine has proceeded very satisfactorily during the year, and has consisted in driving, rising, stoping, &c., on the principal lodes in the mine—viz., the Martha, Welcome, Victoria, Magazine, Regina, Surprise, Empire, Prince, Princess, and Albert reefs, which vary from 1 ft. to 57 ft. in thickness. The No. 4 level on the Martha lode east has been driven on the reef a distance of 530 ft. At 521 ft. the lode was cut through and found to be 18 ft. thick. The western end of No. 4 level on the Welcome lode has been extended a total distance of 1,047 ft. from the No. 2 shaft. The lode split in two places about 50 ft. back from the face, and the level is at present being driven on the south portion, and it is to be extended to No. 3 shaft a further distance of 220 ft. The No. 4 level on the Empire lode, west of the new crosscut, has been driven on the lode a distance of 176 ft.; the lode is 2 ft. 6 in. wide, and is of first-class quality. East of the new crosscut the reef is very large and of good quality. East of the old crosscut the level is in 100 ft., and another 115 ft. will bring the drive to a point near where

No. 4 shaft is being sunk. The old south-east crosscut is now in a distance of 515 ft. beyond the Empire lode. From No. 1 shaft the south-east crosscut at No. 4 level has been driven a distance of 580 ft. The lode in the stopes on the Welcome lode west of No. 2 shaft varies from 13 ft. to 23 ft. in width, and on the east of the shaft it is from 2 ft. to 12 ft. The lode in the stopes on the Victoria is from 3 ft. to 4 ft.; and in the stopes in No. 1 shaft section the Martha lode is from 13 ft. to 22 ft. wide, and also in No. 2 shaft section the same lode is 17 ft. wide in the stopes. No. 3 level south-west crosscut from No. 2 shaft is in 330 ft.; several small leaders are cut in this crosscut, but the level has yet to be extended a further distance of 20 ft. to reach the Empire lode. The No. 3 level on the Regina lode has been widened and timbered for a distance of 230 ft., the lode in this section being from 2 in. to 10 ft. wide. The No. 2 level on the Regina lode from No. 1 crosscut has been driven a distance of 58 ft. west; the lode in places has been broken up, but in the face of the drive it is 3 ft. wide, and the ore is of good quality. The south-east crosscut from the Martha lode near Hogan's Pass is in 133 ft.; at 111 ft. a 12 in. leader was cut through, which corresponds with the place where the Surprise lode should be. Very little work has been carried on on the Welcome lode in this section for some time past; the lode is 16 ft. wide. The Victoria lode is 8 ft. wide in the stope in this section. The filling-in shaft is down 280 ft., and a few feet more will reach No. 2 level; the country has been rather tight of late, and in consequence progress has been slow. No. 2 shaft has now been sunk to a depth of 529 ft. from the surface, but work here has been suspended until No. 5 chamber has been opened out 90 ft. below No. 4 level. The company's mills, which consist of 190 head of stamps, have been continuously worked, and 100 head of stamps is in the course of erection, and will be completed in about four months' time. The former stamps are crushing the ore dry, but the latter will crush the ore by the wet process, and should the wet process be a success the other stamps will no doubt be altered, which will be a great boon to the men employed about the company's plant. 112,501 tons of quartz was treated during the year for the magnificent return of 295,308 oz. of bullion, valued at £316,408 2s. 8d. There are also 3,845 tons of mineralised ore of good value put aside. This has been obtained from the different reefs during developments in the mine. This ore could not be successfully treated under the present mode of treatment, but will be dealt with as soon as the wet-crushing plant in progress is completed. During the year an average of 740 men has been employed in the mine and battery.

Waihi Grand Junction Gold-mining Company (Limited).—Early in the year 1899 this company cut into a reef at their 500 ft. level, from which such a large body of water came that their steam-pumps were unable to cope with it, and the water rose in the winding-shaft a distance of 200 ft. The mine was then closed down pending the arrival of a Cornish-pump equipment. Since recommencing work, which started in June, 1899, the operations carried out are as follows: At the Grand Junction end of the property it was decided to sink a pump-shaft on the end of No. 1 or winding shaft, and to install a Cornish pump to drain the mine. With this end in view a start was made early in September to sink the new shaft. The size of the new pump-shaft is 12 ft. long by 8 ft. wide in the clear, and timbered throughout with 12 in. by 12 in. kauri, with a bearer set of 24 in. by 24 in., and 36 in. by 12 in. every 50 ft. This makes a substantial pump-shaft, being roomy and safe, and will be suitable for working at a depth of 1,500 ft. if necessary. At the end of March this shaft was down 326 ft., leaving 174 ft. to be sunk to reach the present No. 2 level. It is the intention of the company, when the mine is drained, to push forward the drives at this level, and also to continue sinking to the 750 ft. level, where there will no doubt be a fair prospect of striking rich ore. While the shaft for the pumping plant was being sunk a gang of workmen were engaged in preparing the foundations for the new pumping machinery. These foundations are very massive, containing as they do nearly 900 tons of concrete. In putting in these foundations the opportunity was taken to put in foundations for a duplicate of the present engine and pump, so that little time would be required to double the capacity of the pump. They would then be in a position to pump 80,000 gallons of water per hour. The pump is a 16 in. by 10 ft. stroke (Cornish), with plunger and bucket sets complete, and is capable of lifting 40,000 gallons of water per hour from a depth of 1,000 ft., with cisterns and plungers 250 ft. apart. The engine to drive this is a 300-horse-power compound tandem surface-condensing, with compound gear, all gear-wheels having helical teeth. The high-pressure cylinder is 18 in. in diameter, and the low-pressure 32 in., both having a 36 in. stroke. The air-pump is driven by a quadrant from the tail of the piston-rod. The engine is governed by a Porter's governor, which actuates an automatic expansion-valve. The steam for this engine is obtained from two of Hornsby's 300-horse-power water-tube boilers, fitted with low-water and high-steam safety-valves. The feed-water is passed through a Green's economizer of ninety-six tubes. These are placed so that the furnace-gases after leaving the boilers pass around and between the tubes. By this means the temperature of the feed-water is sometimes raised as high as 300°. In the west section a new C shaft has been located, and has now reached a depth of 71 ft. The size commenced was 12 ft. by 12 ft. in the clear, and was carried down this size to the first bearer set. The size of the winding- and ladder-compartments is 12 ft. by 4 ft., and it is the intention to carry the shaft down this size. Should, however, a large body of water be met with it will be possible to open up the shaft to the original size without interfering with the surface-workings. The winding-engine, boiler, and poppet-heads have been removed from the B shaft and placed in position at the new C shaft, and everything is now ready for active work. At this end there is every indication that the continuation of the Martha and Welcome lodes will be intersected, and it is confidently anticipated that a bright future is ahead for this company.

Waihi Extended Mine.—This company's property adjoins the Waihi Grand Junction Mine, and comprises an area of 100 acres. The average number of men employed for the past twelve months has been two, the work being confined to boring operations. Owing to the flat nature of the land, sinking and erection of machinery would be required, which would entail a considerable amount of capital. Before undertaking this work it was decided to go in for boring operations.

Arrangements were then made with Mr. H. J. Gilberd, boring contractor, to bore a series of holes, and up to the present two have been put down a depth of 330 ft., a third being now in progress, which is down a distance of 340 ft. In each of the bores the andesite rock was intersected at a depth of 180 ft. below the surface, the upper portions being composed of rhyolite boulders and pumice formation. In two of the bores quartz was intersected at a depth of 297 ft. and 300 ft. respectively, and penetrated into for a distance of 30 ft. in one and 40 ft. in the other. This shows a large body of quartz, and probably belongs to the Martha reef system; if such is the case, it will traverse the property a distance of between 2,000 ft. and 3,000 ft. Specially-made chisel-bits were used in boring operations, and found more suitable for cutting through the boulders and pumice formation than the diamond-drill. The total number of feet bored up to date is 1,000 ft., at a cost of 6s. 6d. per foot. The assay from the quartz borings (or sand) gives 8 dwt. of gold and 2 oz. of silver, equal in value to £1 16s. per ton. As the result of the assay is very encouraging, the directors of the company have decided upon sinking and the erection of winding machinery to thoroughly develop the property; and there is no doubt that when this work is completed, and the mine properly opened up, it will become one of the gold-producers of Waihi.

Favona and Brilliant Mine.—This property was formerly owned and developed by the Waihi Consolidated Gold-mining Company (Limited), who spent a considerable amount of money in putting down a main shaft a depth of 300 ft., and in erecting pumping and winding machinery, &c. They also opened up three different levels from the shaft, which have been driven various distances, and reefs have been intersected varying from 4 ft. to 6 ft. in width. The capital, however, became exhausted, and it was decided by the shareholders to sell the mine and plant, which was purchased by a local syndicate, who have since amalgamated with the Ohinemuri Claim, which adjoins the property, and on which boring operations have been carried on for some time to try and locate a reef, and also to prove the class of country should they desire to sink another shaft. In the Favona section very little work has been done during the year, but operations are again about to be resumed in a large way to thoroughly open up and improve the value of the property in both sections. At present only seven men are employed, but it is expected that a large staff will be put on in a short time.

Union Waihi Mine.—Work in this mine during the year has been chiefly confined to opening up and developing the Union reef in the different levels from the main shaft, which is down a depth of 485 ft. In the No. 2 level the Union reef, which averages about 5 ft. in width, has been opened up a total distance of 885 ft. east of the shaft; in No. 3 level the same reef has been driven on 725 ft., and at No. 4 level 85 ft. Below the No. 3 this reef has been driven on 428 ft. east of the shaft, and 195 ft. west. In the No. 5 or present low level the same reef has been opened up a distance of 353 ft. east and 185 ft. west of the crosscut. In the No. 3 and No. 4 levels the drives on the reef are being timbered, and the leading stope carried along, the necessary passes, &c., being put in previous to permanent stoping operations being carried on. The Amaranth reef has also been opened up to a considerable extent in Nos. 1, 3, and 4 levels, and is a very large body of ore, from 18 ft. to 20 ft. in width. In the Winner section of the property the Winner reef has been opened up to a fair extent, but very little work has been done for some time. At present preparations are being made for sinking the main shaft a further depth of 200 ft., and a small winding-engine has been specially erected in the main engine-room for the purpose, the winding-rope being passed down the pumping-compartment so as not to interfere with the cage-ways and the operations at the different levels. The mullock from the shaft will be sent up this compartment to the No. 5 level chamber. During the latter part of the year the Waihi-Silverton Mine and battery were purchased by the Union Waihi Company, both properties now being worked under one management. In the Silverton section preparations are also being made for sinking the main shaft. At present a new set of pumps, with the necessary pit-work, is being put in. The battery is also undergoing an overhaul, it being contemplated by the company to erect an additional fifty head of stamps. A branch line is also in course of construction from the main Silverton line, which is to be erected near the Waihi Union main shaft. At present a hundred men are employed in connection with the development of the mine, surface-works, &c. Operations in the Silverton section of the property were carried on by the Silverton Gold-mining Company up to the time the property was taken over by the Waihi Union Company, their operations being chiefly confined to driving and stoping on the main reef in the Nos. 2 and 4 levels, the reef varying from 5 ft. to 9 ft. in width. From this the company treated, up to the month of December, 9,384 tons of quartz for a return of 6,828 oz. 3 dwt. of bullion, valued at £13,724 16s.

Waihi South Mine.—The principal work done in this mine during the year has been the sinking of the shaft a further depth of 50 ft., making a total depth of 270 ft., at which level two prospecting crosscuts were opened out, and driven north and south of the shaft, with the expectation of intersecting one of the Waihi well-known lodes, but so far have not been successful in discovering anything of importance. Fourteen men have been employed during the year.

Waihi Consols.—Very little work has been done in this mine for some time. During the early part of the year sinking operations were carried on in the shaft, but through the plant being rather small to cope with the water operations were discontinued, pending arrangements being made for amalgamation with the adjoining claim, or a scheme devised for the working of the property.

Waihi Gladstone Mine.—The work carried on in this mine during the year has been prospecting, and developing the main reef at the No. 2 level, where it has been opened up to a fair extent, but no returns of gold have been made. From four to eight men were employed.

Waihi Beach United Gold-mining Company.—Only a limited amount of work has been done on this property during the year, the operations being chiefly confined to driving prospecting-levels from the side of the hill, but so far nothing new of a payable character has been opened up. The

property is at present worked under option to Mr. J. Thompson, who is endeavouring to form a strong company, and raise capital to open up and develop the reefs which have already been discovered on the property, but through their position on the coast it will require a good deal of capital to open up and develop these reefs below sea-level. Four to six men were employed in the early part of the year, but during the last six months little or no work has been done on the property.

Wharekiraupunga.

There has been very little work done in this locality during the year. Most of the claims taken up during the boom have been abandoned.

In the Royal Standard Mine a considerable amount of money was spent by the original company in connection with surface-works previous to thoroughly opening up the mine and proving the value of the ore-bodies, with the result that the whole of the property was put up for sale by public auction. The mine was purchased by Captain Hodge, of Coromandel, who has since done a limited amount of work in proving the value of the reefs, from which he had 14½ tons of ore broken out and treated at the School of Mines, Thames, in the month of December, for a return of 18 oz. 10 dwt. of bullion, valued at £24 14s. 10d., which might be considered fairly satisfactory. At present there is only a caretaker in charge of the property, which is under protection, pending negotiations which are being carried on to raise capital to thoroughly open up the mine and prove its value.

Piako County.

Waiorongomai.

Empire and New Find Nos. 1 and 2.—This mine is owned by Mr. E. H. Hardy, who has worked it continuously during the year with ten men, and the results obtained have been exceedingly encouraging. The operations in the mine have been chiefly confined to working out a block of ground from the side of a winze that was sunk on the reef from the upper levels by the Waiorongomai Company. The reef is from 100 ft. to 140 ft. in thickness, but Mr. Hardy has been operating on a portion of it (which contains payable gold) varying from 4 ft. to 8 ft. wide, which produced 1,006 tons of quartz for a return of 738 oz. 16 dwt. of gold, valued at £1,974 4s. 2d.

Alexandra Mine.—This is one man's ground, and has been worked by the owner, Mr. Newsham. The leaders operated on are from 2 in. to 8 in. 2 tons of quartz was treated for 13 oz. 17 dwt. of gold, valued at £45 1s. 3d. The mine has been protected during the latter part of the year.

There has been very little work done in any other mines in this locality during the year.

Katikati District.

Only a limited amount of prospecting has been done in this locality during the past year, and no discovery of importance reported.

Tauranga.

Te Puke.

Fleming's Freehold.—On the eastern side of the hill a low level was put in to intersect the reef, and a winze sunk on the reef from the upper level to connect with the level mentioned, but, owing to the want of money to develop the mine, work has for some time past been stopped. This is to be regretted, as there are large reefs running through the property carrying gold, and, although a considerable portion of the reef that has been tried is low-grade ore, yet it is probable rich chutes might be found if money were forthcoming to develop them, especially as the country in the walls of the reef is, to all appearance, favourable for gold-bearing stone.

There has been only a little prospecting done on what is termed the Sisters, and Copeland's Freehold, but nothing of importance has been discovered.

Whangarei District.

Puhipuhi.

Hampton Plains.—Operations in this mine have been carried out under the supervision of Mr. Holmans, who has had eight men employed in prospecting on the reefs known as the Victoria, Waipu, and Holmans. The Waipu low level is now in a distance of 621 ft., 250 ft. of which has penetrated through a chute of ore which contains a high percentage of silver, and there is about 275 ft. of backs available at this point for stoping. A level is now being proceeded with to cut the Victoria reef 200 ft. below the old silver-chute. Another level is also being driven to intersect a large reef known as "Blue reef," which shows a thickness of 9 ft. on the surface, and has given some satisfactory results. 2,000 ft. of driving, rising, and sinking have been done in prospecting the reef since the present company commenced operations.

Great Barrier Island.

Barrier Reefs Mine (Owners, Barrier Reef Gold- and Silver-mining Company).—This company's property consists of an area of about 2,200 acres, including 90 acres of freehold and 40 acres of Crown land, the balance, I am informed, being held under lease from the Kauri Timber Company, with an option to purchase. The operations up to the present are confined to the freehold and Crown section of the property. In the mine work has been continuously carried on during the year, the principal work being confined to opening up and developing the Lee reef, which is considered to be a highly payable ore-body, and has been opened up at three different levels, and improves in size in its course downwards. In the No. 1 level the reef has been driven on a distance of 150 ft., and varies from 8 in. to 2 ft. in thickness; but very little work has been done

here for some time. In the No. 2 or intermediate level, which connects with the shaft 100 ft. below the No. 1 level, the reef has been driven on a distance of about 400 ft., and varies from 18 in. to 3 ft. 6 in. in width, and is of a kindly description, showing sulphides and silver freely. At present this level is being timbered, and the necessary passes, &c., put in, preparatory to stoping operations being carried on. A rise is also being put upon the reef from this level to connect with the No. 1 level. The No. 3 or main low adit-level is in a distance of 1,100 ft., and at a distance of 700 ft. from the mouth of the tunnel the Lee reef was intersected, and driven on east and west of the crosscut a distance of 900 ft., and varies from 1 ft. to 6 ft. in thickness. The level is connected with the No. 2 level by rises put up on the reef in different places, with double passes and travelling-ways put in so that all the ore coming from the different parts of the mine will be passed down and along this level, which is connected direct with the storage-hopper at the battery by a ground-tram 31 chains in length from the entrance of the tunnel. From the eastern drive on the Lee reef a connection was made by a crosscut to the bottom of the shaft, which was sank from the surface near the No. 1 level, and provides good ventilation throughout the workings, also dispensing with the pumping and winding machinery to this depth. A winze has also been sunk on the reef from the floor of the western drive a depth of 40 ft., and proves the reef to maintain its size and quality. Going down the reef gives an average width of 4 ft. Great difficulty was experienced in getting down this depth, through the large quantity of water which had to be contended with. It will require a substantial pumping and winding plant to develop the reef below the present low level. The battery which is in course of erection by this company is pushed on as rapidly as possible, the work being well in hand, and it is expected that crushing operations will be started in about three months' time. The mode of treatment to be adopted will be wet crushing, amalgamation, concentrating, and cyaniding. The plant will be a very complete one when finished, everything working automatically throughout. It consists of a Hendy battery of twenty head of stamps of 1,000 lb. each, fitted up with a Gates ore-crusher and automatic feeders, with the usual copper-plate tables, to which will be connected classifiers for separating the coarser sands from the slimes, which will be carried on to the concentrator, the slimes being carried direct to the slime-vats, where they will be further treated by agitation and cyanide. The concentrating plant consists of eight Union vanners, which will be erected immediately below the classifiers, and on the same floor as the engine and boiler. The cyanide plant, which is on a lower floor, consists of four large percolating-vats, 22 ft. diameter and 7 ft. deep; three concentrates-vats, 14 ft. diameter and 7 ft. in depth; two storage-vats, 14 ft. and 10 ft. diameter, 8 ft. deep; three sump-vats, two of which are 22 ft. and one 10 ft. in diameter, with 7 ft. sides. The whole of the vats, which are made of steel plates, are being riveted together on the foundation prepared for them. The motive-power for the battery is to be steam, which will be supplied by a Babcock and Wilcox boiler to a Tangye girder horizontal engine of 125-horse power. The vanners will be driven by a separate small Tangye engine fitted with Pickering governors, which will also work the solution-pumps. A small Tangye engine will also be erected for driving the electric-light installation. A very complete assay-house has also been erected, fitted up with all the necessary furnaces, &c. A water-race has been constructed a distance of 130 chains, which will be used for battery purposes only. This is at present used for driving the sawmill which is erected on the side of the creek below the battery for cutting the timber for the battery buildings, hoppers, &c. During the year the average of thirty men have been employed in the mine and surface-works, but during the last six months fully seventy men have been employed in the construction and erection of the battery.

Great Barrier Mine.—This property, which adjoins the Barrier Reefs Mine, was worked under option by the Melville Corporation Company during the greater part of the year, who did a good deal of work in prospecting and developing the main reef, which varies from 1 ft. to 3 ft. in thickness. The operations were principally confined to opening the reef at the lower levels, from where 28 tons of ore was broken out as a trial crushing, and treated at the Moanataiari battery, Thames, for a return of 134 oz. 8 dwt. of bullion, valued at £127 17s. 10d. An average of eight men were employed, but at present the mine is under protection, only a caretaker being in charge.

No work has been done on any of the other claims on this island.

Remarks.

The mines around the Township of Coromandel, with the exception of the Hauraki, have not been as prosperous as could be desired. Several mines have been stopped, the gold obtained from them being insufficient to pay expenses, and a number of men have been thrown out of employment. This has caused a slight depression in the township; still, it is pleasing to find that more gold has been obtained from the district than in the previous year, the increased value amounting to £5,026 14s. 2d. This is largely due to the Kauri Freehold and Four-in-hand returns; and there is every reason to believe a further increase will take place next year, as good returns are now obtained from the Four-in-hand, enabling the directors to pay dividends; and there is every likelihood of the Kauri Freeholds producing more gold. The Waiatai is likely to crush more quartz next year, and the Mariposa and Kapai-Vermont no doubt will be working, and adding to the returns. In the Thames district there is an increase in the value of gold of £22,624 8s. 8d. over that obtained last year; and as the Thames-Hauraki Company has now a considerable portion of their unproductive work done, and the opening-up of the No. 8 and No. 10 levels has been commenced with a view to working the reef from which so many handsome dividends were paid, the prospect of returns from this mine are good. With the addition of the Kapowai (New Find) Mines, the output of gold next year should exceed the year now ended.

The prospects of the mines in the Ohinemuri district look exceedingly promising, and, although the value of the output of gold shows the large increase of £67,687 12s. 7d. over last year, still a larger increase may be expected next year, as the Waihi Company will soon have an additional

100 heads of stamps at work. The New Zealand Talisman is erecting fifty heads, the New Zealand Crown has mortar blocks ready for another twenty heads, and the Wentworth is erecting a Lamington mill, and has the foundation laid for ten heads of stampers.

The output of gold from the Great Barrier district has been small, but the Barrier Reefs Company will have their complete plant finished in about three months' time, when regular returns may be expected from this district.

Drainage.

The deep levels of the Thames are now being drained by what is termed the Big Pump and the Thames-Hauraki pump at the Waiokaraka Flat. There has been considerable trouble for some time past over the adjustment of the amount of money that should be paid by the contributing companies to keep the Big Pump working, and also the Thames-Hauraki for doing a share of the work, and it is pleasing to be able to state that since the end of the year this has been amicably settled, and arrangements have been made with the Thames-Hauraki Company to take over the Big Pump and work the same under that company's management, the various companies benefited to contribute as heretofore a fair share of the cost of pumping to keep the mines dry. The Thames-Hauraki Company are now pumping the water from the bottom level of their shaft, and the machinery and pumps are working very satisfactorily.

The Big Pump: After the annual overhaul of the machinery the pumps were kept continuously working up to the 15th May, when, in order to economize as much as possible, the working of the pump was reduced from twenty-four hours to sixteen hours a day from the above date to the 13th August, when it was further arranged that pumping should be carried on for eight hours a day, and this was done until the 1st September, when it was found the water was rising, and had got up to the No. 6 level of the Saxon shaft; the pump was then run sixteen hours a day, and has continued from that time up to the end of the year running sixteen hours. A breakage occurred on the 27th September to the county main pipes opposite the pumping plant, and, the water bursting out of the pipes, washed away the brickwork of the back wall of two of the boilers, and swamped the whole place. The damage was repaired with as little delay as possible, and pumping resumed before the water rose in the workings that were proceeding in the contributing companies' mines. The machinery was thoroughly overhauled in the month of December, and put in fair working-order, and the most urgent repairs now required is a new roof over the boilers. The consumption of coal for the past year was 1,948 tons.

Sunday Labour in Mines.—Schedule of Permits issued by Inspectors and in force on the 31st March, 1900.

Date of Issue.	Mine.	Number of Men.	Date of Expiry and Remarks.
9/1/99	Waihi	20	Till notified.
1/3/00	Grand Junction	4	"
9/1/99	Komato Reefs	6	"
9/1/99	New Zealand Talisman	14	"
9/1/99	New Zealand Crown	14	"
11/1/99	Big Pump	4	"
11/1/99	Waitekauri Gold-mining Company	21	"
18/1/99	Royal Oak of Hauraki	9	"
18/1/99	Scotty's Gold-mining Company	6	"
18/1/99	Kapanga Gold-mining Company	9	"
18/1/99	Kathleen Gold-mining Company	9	"
18/1/99	Golden Pah Gold-mining Company	9	"
18/1/99	Hauraki Gold-mining Company	12	"
18/1/99	Union Waihi	5	"
18/1/99	Kauri Freeholds Gold Estate	14	"
18/1/99	Woodstock Gold-mining Company	7	"
17/2/00	" "	12	Temporary for a few Sundays. Building a dam.
23/1/99	Waihi Gold-mining Company	10	
16/1/00	" "	35	Urgent work, and for short time. Sinking a shaft.
23/1/99	Waitekauri Extended Gold-mining Company	4	Till notified.
23/1/99	Whangamata Proprietary (Limited)	6	"
23/1/99	Thames-Hauraki Company	10	"
28/1/99	Ralph's Taupiri Coal-mines	4	"
10/2/99	Great Mercury Company	1	"
8/6/99	Hikutaia Gold Syndicate	3	"
6/7/99	Waihi South	6	"
7/8/99	Tararu Creek Company	6	"
17/9/99	Ethel Reefs	4	One Sunday.
		254	

FATAL ACCIDENTS.

A fatal accident happened in the Golden Cross No. 1 shaft, Waitekauri Gold-mining Company, on the 29th November, 1899, to Charles Luscombe, a single man. He was filling the buckets, and standing in the bottom of the shaft in the compartment where the material was raised or lowered, when the rope broke as a bucket of stuff was being raised, and the bucket fell, striking him on the head, killing him instantaneously. The verdict was accidental death, caused by a faulty rope, no blame being attached to any of the officials or any of the company's employés.—Reported on the 4th December, 1899.

Ronald McDonald met his death on the 11th January in the Waihi Company's mine whilst at work in an open face on the surface, caused by a fall of earth about 5 ft. in height, and falling down over a ledge he was working on, 6 ft. high. The verdict of the Coroner's inquest was that death was caused by a shock caused by a slight fall of earth, which his debilitated condition was unable to resist, and that no blame was attachable to any one.—Reported on the 13th January, 1900.

Thomas Casley was killed on the 2nd March in the New Zealand Talisman Company's mine by a piece of rock slipping out of the hanging-wall on him when at work in the stope. The verdict of the Coroner's inquest was that he met his death by a fall of mullock from the hanging-wall, while working in the stope of the New Zealand Talisman Company's mine at about 10.30 p.m. on the 2nd March. As the ground appeared to be perfectly safe, no blame was attachable to any one.—Reported on the 6th March, 1900.

NON-FATAL ACCIDENTS.

Twenty-eight non-fatal accidents occurred during the year, a few of which appeared to be of a serious nature, and were reported on at the time.

I have, &c.,
JAMES COUTTS,
Inspector of Mines.

The Under-Secretary, Mines Department, Wellington.

Mr. R. TENNENT, Inspector of Mines, Westport, to the UNDER-SECRETARY for MINES, Wellington.

SIR,— Inspector of Mines' Office, Westport, 23rd April, 1900.

I have the honour to report as follows on the gold-mines in the Marlborough, Nelson, and West Coast districts for the year ended the 31st March, 1900:—

QUARTZ-MINING.

BLENHEIM.

Jubilee (Owners, Jubilee Gold-mining Company; C. D. Morpeth, legal manager, Wellington).—(6/2/1900): The principal developments are driving a low level, which will intersect the lode at a total distance of 128 ft. Previous to driving, the gold-value of the outcrops were tested by the company's battery. Ten men employed.

COLLINGWOOD.

Taitapu Gold Estates (W. M. Fulton, mine-manager).—(19/2/1900): On the Ant Hill section of the workings four men are sinking a winze below No. 2 crosscut; depth, 69 ft. Ventilation is supplied by hand-fan. Six men surface-prospecting.

Golden Blocks, Taitapu (F. Johnson, mine-manager).—(19/2/1900): Quartz for battery purposes is chiefly mined from driving No. 2 level on line of reef, and raising from same level to connect with No. 1. On completion of the rise connections between Nos. 3 and 4 levels free ventilation will be maintained, and the necessary facilities available to stope the intervening blocks. The company has newly erected a steam-driven five-stamp mill (by Price Brothers), which was successfully started on the 21st March last. The old three-stamp mill was removed and connected with the new engine, which drives the eight stamps. The battery is connected to the mine by direct tram-line. The manager is confident of good returns, and has a sufficient supply of stone in sight.

Parapara Hæmatite-works (Messrs. Washbourne Brothers, proprietors).—(16/2/1900): According to the statement of production furnished by the owners, the output for the year shows a decrease on the preceding year of 50 tons ore-paints, and a small parcel of knife-polish.

WESTPORT.

Britannia.—Mining on this property still continues of a prospecting character. The company erected a two-stamp battery, driven by water-power, but the results obtained from the stone in sight were unsatisfactory. Three men are employed.

Twins.—This property was sold by public auction, and was bought over by the Despatch Foundry Company, Greymouth. The mine is shut down.

LYELL.

Alpine Extended (Martin Conradson, mine-manager).—(1/3/1900): For a considerable time past at this mine the chief ore-supply was stoped from No. 10 level south. The stone is now exhausted, and crushing operations are reduced to eight hours a day. Connection with No. 10 north was raised from No. 11 north face, from which stoping was continued south towards the shaft. The prospects of this reef are not anticipated to be permanent. In view of picking up the No. 9 north block a crosscut was driven 90 ft. from No. 8 face, but the country indications were unfavourable for a reef, and in consequence was abandoned. The principal work pushed on at present, and one

on which the future prospects of this mine depend, is driving No. 7 level to the north boundary, with the object of proving and undercutting the upper-level ore-bodies. Timbering is securely carried out, and ventilation is good. Ropes, cages, and safety appliances are in good order. Reports are daily kept.

United Italy.—Work has ceased.

BOATMAN'S.

Welcome.—At the commencement of the year raising was done from No. 5 Welcome; but attention was afterwards directed to Specimen Hill, and the low-level tunnel was repaired for the first 1,600 ft. This tunnel was driven south 937 ft. towards the Welcome to pick up the old company's line of reef.

Just in Time.—A hoisting-engine was installed, the poppet-legs strengthened, and the shaft unwatered. At the 200 ft. level a steam-pump was placed, and the shaft sunk a further depth of 200 ft. Since sinking was completed driving was started to try and intersect the stone worked by the old Imperial and Reform Companies. Before carrying out these works it was necessary to divert the creek's course to prevent flood-water cutting into the tip-head, which is in close proximity to the shaft-timber. There was no crushing done on these properties during the year.

REEFTON.

Golden Fleece Group: Low-level Tunnel.—(13/3/1900): Operations on this property are confined to the low level. The reef struck in April last encouraged development-work to be vigorously pushed forward, with the result that 2,393 ft. of driving, 1,069 ft. of crosscutting, and 350 ft. of rising have been done. In order to develop and mine the stone from the reef referred to, a main shaft 13 ft. 2 in. by 6 ft. 6 in., comprising two winding, one ladder and pipe compartments, has been started from the low level, and raised a vertical height of 310 ft., which, when connected with No. 6 Golden Fleece, will attain a vertical height of 460 ft. At point of intersection a Ledgerwood double-geared drum-engine hoist, actuated by compressed air, will be stationed. For crushing purposes a steam-driven twenty-five-stamp mill is in course of construction. The engine is of the compound undertype pattern, by Robey and Co., Lincoln. Alongside the mill engine will stand a duplex Rand drill-compressor for ten drills, also another one of five-drills capacity, giving the equivalent of fifteen drills for all purposes. Steam will be generated by two Fraser and Chalmers 60 in. by 16 ft. multitubular exterior-fired boilers, and one locomotive-type boiler by Robey and Co. The battery is of the same pattern as the Progress Mines. Concentration will be performed by Wilfley tables, after which the material will be cyanided. The battery is situate about 27 chains from the mouth of tunnel on the opposite side of Murray Creek, connecting which is a tramway crossing a bridge about 66 ft. in height.

Wealth of Nations Group.—(13/3/1900): The principal work in the mine has been confined to opening out the 600 ft. level, sinking the shaft to the 700 ft., and opening out the same level, besides making the necessary winze and rise connections from the 500 ft. level down to the 700 ft. level—in all, 1,450 ft. of raising and 159 ft. winze-sinking; and the incline shaft has been sunk 103 ft. Practically the quartz milled was almost exclusively mined from developments. The work now engaging attention is sinking the shaft to the 800 ft., driving north on stone in the 700 ft., and south on the same level. Quartz milled during the year shows a gold yield of 930 oz. 2 dwt. 3 gr., valued at £3,760 16s. 11d., or 8 dwt. per ton. An experimental cyanide plant on a working-scale has been erected, in which 292 tons of tailings treated yielded 49 oz. 15 dwt. of bullion, valued at £184 5s. 8d. The results of these experiments prove the material to be somewhat refractory, causing a large consumption of cyanide, against a fair gold-extraction, but the gold in solution readily precipitates. The various works in connection with the mine are safe and in good order. Ventilation sufficient, and reports kept up to date.

Progress Mines of New Zealand (Limited).—(16/3/1900): The aggregate driving on line of reef was 2,200 ft., crosscutting 1,049 ft., raising and sinking 996 ft., besides the main shaft was sunk from No. 7 to No. 9 level, a vertical distance of 200 ft., which makes No. 9 a total depth of 1,116 ft. below the brace. Developments were carried on in a general way all over the mine, particularly in the eastern district, where a considerable amount of driving and crosscutting have been done on Nos. 1 and 3 levels, with the object of intersecting the north and south block, which was first discovered in No. 4 level. On this level raising and sinking have proved the stone to be of large dimensions. No. 7 is being extended east by rock-drills in view of striking the stone referred to. Nos. 8 and 9 levels have both been driven extensively, and stoping is proceeding generally from No. 9 up to No. 4 by hand-labour, with the exception of No. 4, where the large ore-body affords facilities to stope with machines. With regard to the hoisting and compressor plant, there were no alterations of importance made, the only addition being a heater for hot-water feed. The quartz output, conveyed by aerial tramway and crushed, was 44,172 tons. The crushing plant was increased by twenty-five stamps of equal capacity to the original forty, and since the last week of February the whole sixty-five-stamp range has been working steadily, extra driving-power being maintained by the adoption of a double nozzle acting on the same 6 ft. diameter Pelton. Practically the old mill has ceased work, and the gross quartz tonnage treated from both mills was 43,432 tons during the year, yielding 19,312 oz. 18 dwt. 1 gr., the cash value of which was £80,295 19s. 5d. During the same period the chlorination-works treated 887 tons of sulphurets, producing 2,579 oz. 11 dwt. 17 gr. of gold, valued at £10,782 6s. 3d. In view of treating the old accumulated tailings, a cyanide plant, comprising six treatment-tanks 25 ft. diameter by 7 ft. in depth, and three sumps 25 ft. diameter by 6 ft. in depth, are being built in wood. The solution to the treatment-tanks will be raised by a 4 in. diameter centrifugal Tangye pump. The sands will be elevated by a "blow-up" into a launder, which will convey them to three Wilfley concentrators, after passing over which they gravitate into the tanks for treatment, and discharge finally into the main tail-race.

Keep-it-Dark Quartz-mine.—(13/3/1900): The ore-body worked from Nos. 1 and 2 levels was intersected on No. 3 at 300 ft. from main shaft, and driven on 200 ft. The north face still continues to drive in 7 ft. of solid stone, and its vertical position is considerably in advance of No. 2 face, where the stone is pinched out. Thus, extending northwards, reef indications are favourable as deeper levels are attained. The necessary connection between Nos. 3 and 2 levels was raised 172 ft. on the solid stone underlie, whereby the direct-rise system was completed to the surface, giving facilities for filling in, ventilation, &c. Stone was chiefly mined from No. 2 stopes, but in view of dispensing with night-shift in the mine, and to raise sufficient stone for the battery in full work, stoping is commenced on No. 3 level. Timbering, ventilation, and filling are sufficient. Reports kept to date. Since the new ore-body in the mine was developed, the battery alterations completed, and the cyanide developments carried out to a successful issue, prosperity has characterized this company's operations. From prospects seen, this is likely to continue, if not to improve. Quartz crushed, 9,100 tons; gold yield, 2,495 oz. 7 dwt. 9 gr.; total by cyanide, 1,681 oz. 13 dwt. 6 gr. bullion; value, £5,461 8s. 7d.

Hercules Quartz-mine.—(13/11/99): For a considerable time past work in this mine has been of a very irregular character, with the result that the mine was ultimately shut down.

Keep-it-Dark No. 2.—(13/3/1900): This mine is shut down. The winding-ropes are taken off.

Sir Francis Drake Quartz-mine.—(16/3/1900): There was no work done in this mine during the last six months.

Big River Quartz-mine.—(16/3/1900): In this property the quartz blocks are small and irregular in their formation, but are of high value. During the year the quartz output was chiefly mined from a block located between Nos. 5 and 6 levels, having an average width of 5 ft., length of 35 ft., and stoped to a height of 90 ft. Since this ore-body was exhausted stone of a payable character has not been met with, and in consequence operations are chiefly confined to prospecting. Several crosscuttings and sinkings were carried out in different sections of the property, with unfavourable results. After crosscutting 262 ft. on No. 6 level a small block 18 ft. in length and 3 ft. 6 in. in width was intersected and developed. The works are in good order and condition. Timber carefully set; ventilation good; winding-ropes renewed; machinery and safety appliances in good repair. Reports to date.

St. George Quartz-mine.—Not visited during the year.

Last Chance Quartz-mine.—(16/3/1900): This party has ceased to work the quartz leaders in the sandstone formation, and operations are confined to the A1 section of the property. The country-rock is stratified-slate formation, with a thin auriferous layer of clay and quartz intervening, and after the slate is mined off, the quartz is filled into bags and sent to the battery. Favourable prospects were obtained from the upper-drive "dump," and provision is made to sluice away these headings when rain-water is available. As this party are practical miners, the property is carefully worked. The plant consists of a steam-driven five-stamp battery. 593 tons of quartz yielded 211 oz. 16 dwt. 15 gr. of gold.

New Inkerman Mines.—(5/3/1900): Locality, Merrijigs and Rainy Creek; B. Sutherland, mine-manager. Since the New Inkerman Mines Company (Limited) held possession of this extensive property systematic developments have been continuously pushed forward, in view of making Rainy Creek adit-level the centre of mining operations and the main traffic thoroughfare, through which all ore-bodies mined will be conveyed direct to the battery. Connection with Rainy Creek and New Inkerman shaft being successfully completed, it was afterwards determined to drive No. 5 south on defined line from main adit, with the object of intersecting No. 2 Supreme. The reef was struck at 989 ft., and driven on 387 ft. (east 182 ft., and west 205 ft.). Average driving per week, 66·95 ft., and width of lode, 8·5 ft. Also, a vertical shaft is raised 124 ft. from No. 5 south to connect with surface-tramway, in order to facilitate the working of the Golden Gully ore-bodies; for filling, ventilation, &c. In October last the work of renewing the thirty-stamp old battery was started, and fifteen head of stamps are now completed. Preparatory to crushing, the ore-bins were stacked with several hundred tons of stone from driving on reef. The average number of men employed during the eight months was—Wages-men, 42; contractors, 3. The material and plant are in good order. Ventilation good throughout the mines. Timber carefully set. Reports to date. During the four years that developments have been pushed forward on this property the company has expended £35,000 without any returns. The developments include—Driving, 12,000 ft.; sinking, 1,200 ft.; raising, 300 ft.

Cumberland Quartz-mine (William Annear, mine-manager).—(15/3/1900): Mining is confined to prospecting. Stoping was continued on No. 4 level, from which 200 tons of stone treated at the battery yielded very unsatisfactory results. Several broken undefined low-grade ore-bodies were cut, but were considered unprofitable. Timber is carefully set, and ventilation is good. Reports to date.

Paparoa Ranges.

Crœsus (Paparoa) Quartz-mine (James Carroll, mine-manager).—(2/4/1900): The principal developments are driving No. 2 level southward on line of reef, and sinking a winze from same level to prove the country on deeper levels. The reef carries well-defined stone, 4 ft. in width, of fair value, and assumes a more permanent character as sinking proceeds. Stoping is continued on Nos. 1 and 2 levels, employing ten men. The ground is securely timbered, and ventilation is good. The mine-manager (who is newly appointed) was instructed to post his name at mine-mouth; also special rules under "The Mining Act, 1898."

Taffy Quartz-mine (Henry Evans, mine-manager).—(2/4/1900): The country-rock is quartz-slate formation intermixed with siliceous veins. Three men work the ground open-face, and the leaders are crushed by a five-stamp battery, working eight hours a day.

Homeward Bound Quartz-mine.—(15/12/99): On this property two men are driving a crosscut by contract.

Minerva.— (2/4/1900): In consequence of the flume section of water-race being broken away operations are suspended.

Garden Gully Quartz-mine.—Work has ceased since Christmas.

Roaring Meg Quartz-mine.—Work ceased at Christmas. (2/4/1900): Still idle.

Venervia Quartz-mine.—(2/4/1900): Stephen and Boyle are driving a crosscut from main winze.

Julian Quartz-mine.—(18/8/99): This mine ceased work in May last. The company made application to the Mines Department for subsidy to enable them to drive a low-level tunnel, but the proposed tunnel was considered impracticable.

Keep-it-Dark Mine: Description of Plant and Treatment of Ore.

The battery is connected with the mine by a short level tramway. It consists of twenty heads of stamps, each 750 lb. in weight, with boxes of the latest design. The ore is crushed through punched gratings, having 225 holes per square inch, and passed over three sets of copper plates, on which the greater portion of the gold is saved. Leading from the battery, the tailings are run in a chute to the elevator-wheel, and lifted 15 ft. so as to flow into the cyanide-vats, where they are saved and treated. The sand is distributed in the vats by automatic distributers, and the slimy overflow is concentrated by running over canvas slime-tables. The cyanide plant was completed in April, 1899, and consists of six steel leaching-vats 22 ft. 6 in. diameter by 5 ft. deep, with three steel sumps, one 18 ft. diameter and two 13 ft. 6 in. diameter, each 4 ft. in depth. There are two zinc-extractor boxes 12 ft. 6 in. in length, with ten divisions each, made of kauri, having side discharge-launders for cleaning up the gold-slimes. The leaching-vats are fitted with filter-beds and central discharge-doors, which slope 3 in. towards the centre. Each vat takes about forty hours to fill from the battery, after which the sand is drained, and treated with cyanide until the gold is extracted. After washing, the tank is discharged by sluicing, which can be done in three hours. The whole operation of filling, treating, and discharging takes about nine days. There are three different strengths of cyanide solutions used, which are varied according to the quality and nature of the ore under treatment, the average consumption of cyanide being about 2 lb. and of zinc 3 lb. per ton of tailings treated. In connection with the plant is a complete assay- and melting-house, where regular assays are made of the ore during its course of treatment.

From April, 1899, to 31st March, 1900, the battery crushed 9,100 tons of ore, which yielded 2,495 oz. 7 dwt. 9 gr. of gold, equal to about 5½ dwt. per ton. During the same period 7,550 tons of tailings, including 900 tons accumulated, were treated with cyanide, which yielded 1,681 oz. 13 dwt. 4 gr. of bullion, valued at £5,461 8s. 7d., or equal to about 14s. 4d. per ton.

Alpine Cyanide Plant.

Messrs. Aitken and Kingswell, having purchased the Alpine Company's accumulated tailings for the sum of £555, together with a four-years option on all tailings produced, at the rate of 1s. per ton on crushed quartz from the mine, erected the above-named plant in March, 1899, at a cost of £1,500, with a working-capacity of 1,000 tons a month of eight days' treatment. Mr. Aitken (who designed and supervises the Keep-it-Dark and Alpine plants) constructed the four leaching-vats and zinc-extractor boxes of equal dimensions on both properties, the two sumps being 20 ft. and 15 ft. diameter respectively by 3 ft. in depth. The crushed ore leaving the stamps is passed over copper plates and blanket-tables. The blanket-washings are afterwards treated by berdans. The tailings then pass to the cyanide-well, and are elevated by a blow-up jet-pump into long buddles, thence trucked to the leaching-vats. After treatment the waste sands are sluiced through side discharge-doors. Practically the cyanide plant is idle in consequence of crushing operations being discontinued, owing to the unpayable quality of the mine-ore. However, there is little doubt that if the cyaniding and crushing were worked as one concern the company could utilise the low-grade ores more effectively, as the tailings treated direct from the copper plates would enhance the cyanide gold output, and dispense with the use of blankets and berdans; also a considerable saving would be effected in the management expenses.

During the year 9,630 tons of tailings was treated, which yielded a gold-value of £4,294 12s. 2d.; average value per ton, 10s. Considering the accumulated tailings were chiefly produced from low-grade ores, the returns are payable and satisfactory.

General Remarks.

The gold output shows an increase of £28,886 2s. 2d. over the preceding year.

Reviewing the productiveness of the gold-producers, together with the extensive and successful mining developments that have steadily been pushed forward to a final issue in the Golden Fleece and New Inkerman Mines, it may be anticipated that, with the additional crushing-power and gold-saving appliances now being erected on these properties and at the Progress Mines, the gold output for the ensuing year should be marked with a substantial increase over the past.

Accidents and Fatalities.

Progress Mines, Reefton.—(28/4/99): A miner named Christopher Kassler was found dead in a winze between Nos. 5 and 6 levels. Dr. Conlon's evidence showed death was due to heart-disease.

Hercules Quartz-mine, Reefton.—(13/11/99): A miner named Thomas Martin was killed by falling down a ladder-way between Nos. 6 and 7 levels when leaving his work at "knock off."

Progress Mines, Reefton.—(8/12/99): A miner named Patrick Sweeney was killed by a fall of mullock in his working-face.

Progress Mines.—(21/3/1900): A trucker named M. Connors had his arm broken between a truck and set of timber.

ALLUVIAL AND HYDRAULIC MINING.

MAHAKIPAWA.

King Solomon Mine (Alexander Campbell, mine-manager).—(8/2/1900): According to the mine-survey at date, the main tunnel had been driven in the auriferous gutter a further distance of 206 ft. towards the old shaft: thus a solid barrier of 97 ft. is left between the old and new mines; but, as data relating to the old workings was of doubtful character, and the ground not suitable for carrying forward reliable boreholes, the company was notified to unwater the old mine, which course they have decided to carry out previous to further encroachment, and preparatory works are well advanced for that purpose. At present operations are confined on a westerly lead, 80 ft. back from the face. The drives are all well and securely timbered. Eight men employed, five at new mine three at old mine.

Mahakipawa.—(8/2/1900): Edwards and Riley are sluicing the Cullensville Creek bed, about a mile above the old King Solomon shaft. Good results were obtained on a bend of the creek. Near the caves on the right-hand branch seven miners are sluicing a section of old ground when water is available; also on the left-hand branch a little gold is found.

Wakamarina Gorge Claim (J. A. Sloane, mine-manager).—(9/2/1900): In consequence of the flood-waters bursting the tail-dam, the syndicate has decided to construct a new one previous to further mining operations, as all efforts to pump out the water were futile. Eight men employed.

TAKAKA.

Waingaropupu Creek.—(22/2/1900): This creek is locally named the "Bu-Bu Diggings," and twelve men generally find employment. Mr. Barney has taken up a large area for hydraulic purposes, but, beyond pegging off the ground, nothing has been done to develop the property. There are two miles of this creek-bed pegged off for dredging purposes.

COLLINGWOOD.

Parapara Hydraulic Sluicing Company (Area, 150 acres; William Peters, mine-manager).—(16/2/1900): Sluicing operations have been continuously carried on at the Hit-or-Miss; but scarcity of the water-supply has confined operations to the work of two nozzles operating on the main creek-bed, preparatory to further extending the north-side workings when water is available. In consequence of the very dry season the hydraulic-elevating plant was idle. The works and appliances are in a satisfactory condition. The main pipe-line is being thoroughly overhauled and tarred.

Quartz Ranges Sluicing Company (Area, 230 acres; F. G. Mace, mine-manager).—(13/2/1900): For the half-year ended March 220,000 cubic yards of gravel was washed away for a gold yield of £1,160. No. 2 face is the chief centre of operations, and three nozzles, discharging twenty-six heads of water, were operating with satisfactory results. The development of Nos. 1 and 3 faces are well advanced, but scarcity of water tends to retard operations. In connection with No. 3 face a tail-race tunnel, driven on a gradient of 6 in. to the 12 ft. bore, is within 80 ft. of the washdirt; also a branch pipe-line is being laid from the main. The works are in good order, and are carried out in a systematic manner. Twenty-six men are employed.

Rocky River Excelsior Sluicing Company.—(13/2/1900): Progress on this property is of a slow character. When visited, work was ceased, owing to Mr. A. Trent, mine-manager, receiving a riding accident.

MARUIA.

The works on the Maruia Plains were not visited during the year.

WESTPORT DISTICT.

The Wellington Old Diggings, Buller River (Area, 60 acres; owners, Wellington Gold-mining Company, Limited; O. S. Watkins, legal manager).—This company has carried out extensive developments in the construction of water-races and other works to completion, and active sluicing operations are now in full swing.

Muckle and Party.—(26/2/1900): The Caledonia Gully tailings-deposit still yields remunerative returns to the owners. During a necessary extension of the flood-tunnel, sluicing operations were suspended for three months at the commencement of the year. Active sluicing is now resumed.

German Creek.—(26/2/1900): Along the terraces and tributaries of this creek there are twenty miners employed, who discharge mining *débris* into the Orowaiti River.

The Bendigo and Fairdown properties, which were owned by the General Exploration Company, are shut down, and all work has ceased.

Waimangaroa River.—Four parties found profitable employment by tunnelling on the banks of this stream.

Halligan and Party, Addison's Flat.—(27/2/1900): This sluicing and elevating claim continues to yield very favourable returns. The party consists of six shareholders.

Garry Owen Claim.—(27/2/1900): This sluicing and elevating property is worked by Carmody and party of eight shareholders in a workmanlike manner. The working plant is substantial and well cared for. The gold returns are very satisfactory.

Shamrock Claim (Philip McInroe, owner).—(27/2/1900): Operations on the north face have ceased. The sluicing and elevating plant is removed to the south side of the property, where a new face is developed, and active sluicing has been commenced. Six men are employed.

Virgin Flat Gold-mining Company (Limited).—(22/9/99): On this property developments are steadily pushed forward, but, as the water-race scheme comprises extensive tunnel-drivings and open-channel cuttings, a large amount of work yet requires to be done before sluicing operations are commenced. The following shows the works commenced and not completed in the construction of head-race and tail-race developments: Head-race—Completed, 3 miles 10 chains; tunnelling not completed, 103 chains. Tail-race—Tunnelling completed, 40 chains; tunnelling not completed, 15 chains. The sawmill for cutting mining timber and the head-race for driving same are completed. Twenty-two men are employed.

Lucinda Claim, Fools' Terrace.—The line of water-race from Nile River has been surveyed, and about 800 ft. of tunnel has been driven to prospect the property. This area is under protection pending flotation.

Ahaura.

(25/1/1900): In connection with mining matters there is little change to note in this district. About twenty Europeans and a few Chinese find employment.

Orwell Creek.

(25/1/1900): This mining village still retains its prosperous appearance, although mining does not improve.

Nelson Creek.

(14/3/1900): Along the terraces and tributaries of this creek twenty-five Europeans and one Chinese miner find favourable returns.

Bellhill Hydraulic Company.—(7/3/1900): This property is now owned by a Kumara syndicate. Dr. Scott, of Kumara, is secretary, and Mr. C. Carlson is mine-manager. Since the present company has taken over this property extensive developments and alterations have been carried out to simplify operations.

German Gully, near Callaghan's Creek (Fred. Berendson, secretary).—(26/10/99): There has been no defined work done beyond prospecting.

Healey's Gully (Owners, the Republic Sluicing Company; John Balami, mine-manager).—This company employ nine men in connection with sluicing operations and water-race maintenance. Considerable alterations were carried out on the water-race during the year.

No Town Creek.—(30/11/99): This old mining locality still gives employment to about forty Europeans and an equal number of Chinese, who are reported to make good wages.

Grey Valley.

Sulky Gully (F. Wills and W. King, owners).—Since the subsidised water-race was completed sluicing operations have so far been a complete failure. A party of Chinese have taken up the property.

The Grey River and Barrytown districts were not visited during the year.

Hokitika.

Humphrey's Gully Hydraulic Sluicing Company.—Operations have been chiefly confined to repairs and renewals to the water-race. This gigantic water-race scheme has involved extensive developments and alterations to be made in regrading, retimbering, and cutting of tunnels and open channels; also the siphon system has been substituted to replace expensive and elaborate flumings, in order to insure an abundant and relible water-supply for all practical purposes in connection with the profitable working of this auriferous area.

Craig's Freehold.—(8/3/1900): Since this auriferous area was reopened, developments have been successfully and systematically carried out by both parties of tributers, who are now reaping a fair harvest in recompense for their arduous undertaking. On the north side the main drive has reached the rise boundary of old workings, and direct air-connection is made with the original air-shaft. On the south side an air-shaft was sunk on the terrace, from which a reliable air-current is established. Both parties have tapped the old workings at several points, which nullifies the danger of noxious gases being met with as the old ground is approached. Twelve men are employed.

James Main and Party, Kanieri.—(6/2/1900): This subsidised drainage-tunnel, which was started from the Kanieri River, and driven 1,400 ft. to prospect and unwater the deep gravels in Commissioners' Flat, has been successful in striking the auriferous drift in payable quantity. The ground is worked by driving, and hoisted up a vertical shaft by means of water-balance gear.

Ross.

Donnelly's Creek Drainage-race.—(7/2/1900): The contractors ceased operations at the end of last year, and nothing further has been done.

Ross United.—(7/2/1900): This property is still worked on the old principle—viz., by eight tributers, who make a bare living.

Mont d'Or (Charles Davey, mine-manager).—(7/2/1900): This property yielded gold to the value of £6,529 18s. 6d., and paid in dividends £3,600 to the shareholders; working-expenses, £3,578 15s. 5d. The Greenland section of this property, which dips south-east from the present workings, has occupied the attention of the management to develop and work the faces on the lowest possible levels. In order to carry out this work most effectively,

two 22 in. diameter pipe-lines, fitted with automatic hydraulic valves (by A. and T. Burt, Dunedin), are laid in position, awaiting the arrival of nozzles from California. The company are determined to spare no cost in making this property a *bonâ fide* and up-to-date concern. Twenty-two men are employed. No accidents were reported.

Prince of Wales Claim.—Sluicing operations are suspended pending the flotation of a dredge to work the ground.

WAIHO.

Waiho Hydraulic Sluicing Company (M. Nicholas, mine-manager).—(24/3/1900): The development-works carried out on this property are substantially built and systematic; but, unfortunately, the main bottom dips from the present workings, which necessitates a large expenditure of labour in cutting down the tail-race so as to give free exit for the tailing *débris*.

Duffer Creek.—(24/3/1900): This once famous gold-producing district gives employment to two Europeans and six Chinese.

Lake Ianthe.—There was no person at work on Allon's sluicing claim.

Waiho Forks.—Two men employed bringing up a tail-race.

Wataroa.—One man at work on this creek.

When this district was visited a large number of miners had made all necessary arrangements to migrate from the gorge during the winter months.

ACCIDENTS AND FATALITIES.

Greymouth.—(17/10/1899): John Sketch, aged sixty-seven years, and Robert Marchant, aged eighteen years, were both killed by suffocation in the bottom of a shaft, situated four miles north from Greymouth.

DREDGING.

Wakamarina River.—The Imperial is the only dredge at work on this stream.

The McKenzie was considerably damaged about nine months ago, and the repairs necessary to place her in working-order have not been completed.

Buller River.—The Buller No. 2 dredge is fully equipped with the most modern machinery and safety appliances, in order to cope with the heavy gravels peculiar to our West Coast streams.

Three-channel Flat, Buller River.—The Consolidated is the original Cocksparrow, which was bought and overhauled by the present company. The machinery is not of the up-to-date type and many stoppages are incurred to working operations.

Totara River, Ross.—This dredge is owned by an Auckland syndicate, and holds a first place on the Westland waters as a finished and up-to-date machine. Length, 75 ft.; breadth, 30 ft.; depth of hull, 6 ft.; and well-hole, 6 ft. 6 in. in width.

Mahinapua Lake.—The Mahinapua dredge has not yet resumed operations.

No dredge accidents are reported.

GENERAL REMARKS.

The success which the gold-dredging industry has attained in the southern mining district has opened fresh fields for development and enterprise. Hidden possibilities await the mining engineer's skill to unearth the gold from the vast auriferous deposits which have been carried down and distributed by the agency of rivers. Viewing the natural resources of the West Coast mining areas from unbiassed and practical data, safe and profitable investment may be assumed if guided with judicious care and forethought on the part of the speculator; but it is to be regretted that wisdom does not always sit in high places in mining ventures.

From registered returns to hand, dredging areas have been applied for and granted on nearly every stream and river-flat, and in some cases terraces. Some of the dredge experts consider that the fine gold hitherto lost by hydraulic sluicing can be dealt with more successfully by the modern dredge, and a higher percentage of the gold saved. Be this as it may, it is not the province of this report to discuss the subject. Practically the most suitable dredging-ground is generally known as "wet areas," and these are being prospected by boring and shaft-sinking. But, as a question of accuracy, where air-lock cylinders can be applied with convenience, samples of the gold-bearing stratas could be tested as sinking proceeds, and more reliable results obtained.

In dredge-building for the West Coast streams the first and most practical principle of economy to be observed is strength in all parts of construction, as the gravels vary in size and weight, and large trees are imbedded in the upper alluvial drifts. These may be anticipated as continuous enemies.

The extensive black-sand deposits peculiar to the West Coast beaches await the scientist's skill to discover some practical and economical process of extraction, by which the sands can be treated profitably in large quantity, as working-conditions—viz., water and fuel—are within easy access where these sands abound.

I have, &c.,

R. TENNENT,

The Under-Secretary, Mines Department, Wellington. Inspector of Mines.

Mr. E. R. GREEN, Inspector of Mines, to the UNDER-SECRETARY for MINES, Wellington.

Office of Inspector of Mines, Southern District,

SIR,— Dunedin, 10th May, 1900.

I have the honour to present the following report on the gold-mines visited by me up to the 31st March, 1900:—

QUARTZ-MINING.

Cromwell Proprietary Gold-mining Company, Bendigo (J. A. Dobson).—(21/11/99): Work suspended temporarily pending new arrangements with tributers, who are on the claim ready to start work. It is expected that development-work will be resumed shortly. A prospecting-shaft was being sunk up the hill on the line of reef, but operations are suspended in the meantime. Work recently done mainly on the 150 ft. level in the whim-shaft, the stone from which paid fairly well.

Glenrock Consolidated (Limited): Premier Mine, Macetown (W. Patton, manager).—(27/11/99): Stone in sight is limited in quantity, but a new lead of quartz, which it is hoped will make and carry for some distance, appears in Nos. 21 and 22 rises. At the end of the main level (1,500 ft.) an electric motor is used for hauling out of the dip, and also for driving an air-fan. Air is forced from the fan to the face (1,200 ft.) in 4 in. pipes, and, as may be expected, the air in the working-faces is rather dull. Mr. Patton proposes to bring over and use a larger fan now lying at the Westralia Mine, which is idle at present. The reef being worked "bottoms," and the main dip is being driven on the "cut-out," which dips at an inclination of about 1 in 4. Substantial timber is used, and kept well up to the face where required. Eight men are employed.

Tipperary Mine, Macetown.—(27/11/99): Mine and battery standing; nothing doing. Mr. Millard, late foreman, is now working in the Premier Mine.

Achilles Goldfields (Limited), Bullendale (James Edwards, manager; J. S. Cherry, superintendent).—(30/11/99): No 6 level being opened out on both sides of the incline shaft. On the western side stone appears in the bottom, and, being irregular in run, a crosscut is being put in to prove it. These levels are being driven with continuous shifts, and will doubtless prove the ground rapidly. The crosscut in No. 6, besides prospecting for the lode which is supposed to be in there, is also trying to locate an old level known as Plumb's winze, and which may contain a body of water. The winze was packed, but to what extent is not known, as there are no plans of the work available, but some of the old hands know of the existence of this winze. The face and sides of the crosscut indicate proximity to water, and boreholes are being regularly kept going. (I wrote Mr. Edwards on the 25th December, 1899, drawing his attention to general rule 40, section 206 of "The Mining Act, 1898," and asked him to comply with same in regard to the crosscuts being driven to locate Plumb's winze.) Except in No. 6 level, the air is good throughout the mine. Ladders, timbering, and appliances are in excellent order. During the inspection by Mr. Hayes and myself we found that the men in No. 6 level were very careless in their handling of dynamite. We observed five plugs of dynamite in the nail-box on the roadside, and a box of caps on a ledge just above the box; further in two plugs were lying on a small ledge on the roadside. I gave Mr. Cherry notice to prosecute, and two men named Jones and Buckham were fined 5s. each, and ordered to pay £1 9s. costs of Court, and 10s. 6d. professional fee.

Bella Reef, Lammerlaw, Waipori (Stewart and party; R. Kruger, manager).—(13/12/99): Work has been going on intermittently for some years. After being idle for a considerable time, a small company was recently formed to work the mine. The stone is poor, and the locality is somewhat inaccessible. Work has to be suspended during winter owing to frost. The level has been driven 500 ft. on the line of reef, and the stone stoped out overhead. There is a good deal of water dropping from the roof. The timber in places is showing signs of deterioration. At the face the stringers of quartz are split by mullock. A thin vein of quartz left on the hanging-wall by the former manager is being taken off. The men in charge apparently have no conception of the Mining Act, and in consequence have failed to comply with its requirements *in toto*. On my return to Dunedin I wrote the manager pointing out that he would have to comply with the requirements of the Act, notwithstanding the fact that the mine was being worked on a small scale.

Cox's Reef, Lammerlaw Range, Waipori.—A small battery of five heads of stamps erected at the mine. The crosscut drive is in 300 ft. Mr. Knight anticipates that another 200 ft. will cut the reef, which is expected to be a good one. A fresh start is to be made at an early date. Not visited.

O.P.Q. (Waipori) Gold-mines (Limited), Waipori (A. E. Inder, general manager; G. M. Steadman, mine-manager).—(14/12/99): Air slack at face of 270 ft. level (No. 3). Water-blast used for driving air in, but, the pipes being only 3 in. diameter and 320 ft. in length, friction is rapidly overcoming efficiency. Timber excellent throughout the mine. A good deal of opening-out and developing work has been done, and there should be a steady output of stone for some time after stoping begins. The stone is patchy, and in places distributed in thin veins throughout the mullock. Having plenty of battery-power, everything—mullock and stone—is being put through in the meantime, which saves a large amount of picking. Winding plant and appliances generally in good order. Number of men employed—Underground, 20; above, 11: total, 31.

Harris's Saddle Hill Gold-mining Syndicate (Adam Harris, manager).—(19/12/99): Mr. Harris worked on this reef some years ago, and is now prospecting for some scheelite which he then knew to exist. The tunnel, which is in 250 ft., has cut two small shoots, and is now running along a flat leader carrying pug and barren quartz.

White's Reef, Old Man Range (R. T. Symes, manager).—(10/1/1900): Putting in prospecting low-level tunnel to cut reef at 100 ft. below old workings. Mr. Symes is trying to get below and beyond the old workings, and is sanguine that some rich stone will be struck. Timber good and air excellent. Five-head battery driven by turbine. Six men are employed.

Gabriel's Gully Quartz.—(6/2/1900): Mine abandoned. Fallen in.

Bonanza Gold-mining Syndicate, Macrae's (Beal and Peterson, owners; C. Rillstone, manager).—(28/2/1900): Strike of reef east and west, dip north. Main low level cuts the reef at 500 ft., and is continued for 1,000 ft. on the line of reef, at which point the stone is lost, the reef being split into several confusing shoots of mullock carrying thin veins of barren quartz. A pro-

specting rise drive, 20 ft. west, meets fairly good stone at 130 ft. above the main-level face. The upper levels have been stoped out to the surface so far as they have been driven. The stone being taken out and crushed is got from the 200 ft. level, and occurs somewhat irregularly, branching into shoots varying from 3 in. to 12 in. in width. The quartz is dropped down a shoot, at the bottom of which the trucks are filled and run out on a good road to the aerial-rope tramway. There is plenty of unworked ground to the westward, rising on the ridge. The reef in that direction has been well proved, and is fairly payable, averaging 14 dwt. The stone is carried from the mouth of the main level to the battery by a travelling aerial rope-way, a quarter of a mile in length. Ten buckets, each capable of holding 2 cwt., are spaced along the rope, which is worked by gravitation. The battery-house contains a rock-breaker, 5 ft. grinding-pan, Challenge ore-feeder, and a 3 ft. Huntingdon mill, the whole driven by a 6 ft. Pelton wheel under 100 ft. head of pressure. Water, which is in short supply in summer, is stored in a dam averaging 8 ft. in depth, and having an area of about 1 acre. No rules posted. No magazine on surface; case of dynamite simply laid under a ledge of overhanging rock up the gully. Fifty plugs of dynamite in an ordinary box in a drive underground; no door on the place or other measures taken to indicate its being a magazine. Air good, and a sufficiency of good timber used where required. I drew the manager's attention to the necessity for providing better storage for explosives, also as to posting of rules, and he promised to comply with requirements forthwith. Total of ten men employed.

Mount Highlay Company, Hyde (C. Nunn).—(1/3/1900): Work stopped for a week; cam-shaft broken. Reef cropping out on the surface 8 ft. wide, lying at an angle of about 45°, dip north. Incline shaft down about 100 ft., from bottom of which levels are driven on each side. Stone being blocked out from levels to the surface. Plenty of good timber used underground, and a large supply on top. No proper place below for explosives; a box on the roadside, evidently used by the miners as a seat, contained fifty plugs of dynamite, half a box of caps, and some fuse. The tramway to the battery should be kept in a better state of repair, considering the risk of accident owing to the steepness of the sideling below. I wrote the manager requiring him to provide better storage arrangements for explosives.

W. and G. Donaldson, Golden Point, Deepdell Creek, Macrae's.—(1/3/1900): Blow of quartz and scheelite on the point being worked opencast along the outcrop. Where the stone is taken out a well-defined reef can be seen, 8 ft. between the walls, dipping north, and laminated in the country-rock (schist). The stone is conveyed from the mine to the battery on a stationary rope-way 300 yards in length; the loaded box brings up the empty one. A flexible-wire rope is passed round a pulley at the head of the rope-way, and the ends are attached to the boxes. The battery plant (previously described) is capable of treating 60 tons weekly. A considerable percentage of high-grade scheelite is obtained, and, as there is a good demand for that mineral at present, the claim is highly remunerative.

H. V. Mills and Sons, Macrae's.—(2/3/1900): This mine, like Donaldson's, is a blow of quartz on the Mount Highlay line of reef, and is worked opencast on the outcrop. The stone is carted about half a mile to the battery. On the occasion of my visit the water-supply had given out, and all hands were occupied deepening the dam and increasing the height of the embankment. The battery, five heads, is served by a James ore-feeder, and is driven by a 7-horse-power portable Marshall engine. A Tangye pump, 5 in. by 5 in. by 2 in. delivery, is used for raising water from the dam to the battery-house. About 60 tons per week is put through when water is available.

Gympie Reef, Adam's Gully, Carrick Range (Lawrence Brothers).—(10/3/1900): Prospecting-tunnel in 40 ft.; shaft sunk 16 ft. on the reef. Taking out a small block of stone for trial crushing. Three men.

Carrick Range (Lawrence Brothers).—(10/3/1900): Cleaning out old workings on the Heart of Oak and Star of East reefs. Taking out any stone left by former owners, and also the filling, occasionally striking good patches. The work may be described as surface-work and fossicking, employing two men.

Day Dawn, Carrick Range (Lawrence Brothers).—(10/3/1900): Extensive work on good stone has been done on this reef in the past. Messrs. Lawrence have recently sunk a shaft 85 ft. on to the reef, and stoped out all the payable stone available. Intend prospecting further at an early date. Two men employed.

Go-bye Claim, Carrick Range (J. B. Holliday).—(10/3/1900): Prospecting-tunnel in 440 ft., but standing in the meantime waiting for timber. Expect to cut the reef almost any day. A prospecting-shaft is being sunk on a reef which is here dipping south, contrary to the usual northerly dip. Two men at work.

Alluvial and Hydraulic Mining.

Arrow Falls Sluicing Company (J. A. Miller, manager).—(27/11/99): A centre wall is carried from the tunnel up stream, and the water can be turned at pleasure into the tail-races on either side of the wall. 60 ft. of boxes on each side save the gold. This claim may be expected to improve in the near future. Some very heavy work has been done: one stone alone 40 ft. in length has been broken up and removed. The ground ahead is much lighter, and the claims widen out. Eight men are employed.

Bakery Flat Sluicing Company, Upper Waipori (J. Johnston, manager).—(13/12/99): Water is brought in from the eastern slopes of the Lammerlaw Ranges. The races are thirty-nine miles in length; five heads of water at the claim, under 300 ft. of pressure, work one elevator and two directors. Face, 12 ft. Eight men are employed on this claim.

O'Brien and Party, Golden Point, Upper Waipori.—(13/12/99): Small sluicing claim, half a mile above Bakery Flat. Not visited.

Lammerlaw Creek Hydraulic Gold-mining Company, Waipori (W. E. S. McKnight, manager).—(13/12/99): Claim at junction of Lammerlaw and Nardoo Creeks; sluicing and elevating. Face about 9 ft.; old tailings and peat on top, and 12 in. of wash on the true bottom. Chinese employed to clean up the crevices and inequalities of the bottom with hoop-iron scrapers and scrub-brushes. Sixteen miles of race; eight heads of water; 250 ft. pressure; one elevator; and two nozzles. Seven men employed.

Farrell's Deep Lead, Waipori (James Gare, manager).—(14/12/99): Work at present confined to a spur on Mr. Cotton's private property. Ground leased under arrangements of acreage rent and royalty on gold won. Elevating, 30 ft.; face, 12 ft. (top clay 4 ft., gravels 5 ft., gold-bearing wash 3 ft.). The gold is very fine, and, as the boxes are only 48 ft. long by 3 ft wide, the probability is that a considerable proportion of gold is carried over into the tailings. Venetian riffles and perforated plates are used, with cocoanut-matting and calico underneath.

Deep Stream Amalgamated Hydraulic Sluicing Company (G. Heideman).—(4/1/1900): Water is brought in eleven miles from Scrubby Creek, the main branch of the Deep Stream. Penstock 350 ft. above claim. 1,400 ft. of 13 in., 1,400 ft. of 9 in., and 500 ft. of 7 in. pipes in use. Eighteen heads of water available, and two paddocks at work; one elevator and one nozzle in each, also independent pump for use when claim idle, as Mr. Heideman does not believe in running clean water over his angle-iron ripples on account of the scour set up by doing so. Face, about 20 ft. 15 ft. of quartz-drift, and 5 ft. of silt on top. Gold fine, and principally on the bottom (schist). Sixteen men are employed.

Post-office Creek Gold-mining Company, Verter Burn (S. B. Carpenter, manager).—(5/1/1900): Elevating and sluicing claim, formerly Parker's, who left 12 ft. to 14 ft. of false bottom, which is now being elevated. Occasional runs of gold are also followed into the bank on top of the false bottom. A face of quartz-drift 60 ft. to 80 ft. high runs up the east side of the paddock. I warned Mr. Carpenter that great care should be exercised in working under such a high face. Seven men are employed.

Evans and Tillie, Orepuki.—(20/1/1900): Driving and blocking out. Only one opening. Drive 6 chains to face. Air fairly good, but it must be very bad at times, the running of the truck backward and forward being the only ventilating medium. Timbering excellent. Five men are employed.

Wallace and Whalen, Orepuki.—(20/1/1900): Face above mine-mouth top-heavy, and ready for falling. Instructed the manager to trim and keep a good batter on the bank. Plenty of good timber used.

Forbes, Orepuki.—(20/1/1900): Driving and blocking out. (21/1/1900): Sluicing.

Levy and Sorgenson, Orepuki.—(20/1/1900): Driving and blocking out. This mine is nearly finished. Taking out the last block.

Undaunted Gold-mining Company, Orepuki.—(20/1/1900): Driving and blocking out. Mr. Corbett was ill, and unable to show me round.

Local Industry Gold-mining Company, Lawrence.—(6/2/1900): Working at lower end of claim. Face, 12 ft. to 14 ft.; mostly old tailings. This is the first elevator at work on this part of the claim, but the ground has all been turned over several times by Europeans and Chinese. Gold on the bottom shotty, and that in the old tailings very fine. An average of seven men employed.

Blue Spur, Lawrence (J. Howard Jackson, general manager; J. McHattie, mine-manager).—(6/2/1900): Three faces at work; two nozzles in each face. The cement is very hard, and has all to be blasted out of the face. The lumps are further broken up by men with mattocks, and the material is then sluiced to the elevators. The present bottom is being carried along on a sandy bar, below which the ground is much poorer. At the centre of the claim the face is over 100 ft. high. The disposal of the tailings is giving the management some trouble, owing to the slight fall there now is between the delivery and the tailings-heap. Being short of water, work only equals one and a half shifts per day. Thirty-five men are employed.

Kitto, Hancock, and Party, Munro's Gully.—(6/2/1900): Elevating tailings from the old spur claims, and cleaning up bottom, which carries very fair gold. Working back to the cement in the spur. This claim at present employing nine men working one and a half shifts per day, and has many years' work before it.

Mills and Brown, Upper Evans Flat (E. Mills, manager).—(6/2/1900): Elevating claim on the roadside. Face, 10 ft.; half old tailings. The bottom is new ground. Water is brought in from the Tuapeka River (nine miles). 200 ft. head of pressure. Rough gold on the bottom (schist). Six men at work.

Golden Rise Hydraulic Elevating Company, Wetherstone's (Donellan, Smyth, and Adams).—(7/2/1900): Elevating-ground being now worked for the fourth time. Worked previously by Europeans and Chinese. Seven men at work.

Sailor's Gully Elevating Company, Waitahuna Gully (A. Barr, manager).—(7/2/1900): Working near the head of the gully. Face, 5 ft. to 6 ft. Ground being worked the third time. Schist bottom. Water is brought in from Waitahuna heights. Race, twenty miles. 2,000 ft. of pipes, and 250 ft. head of pressure. Seven men at work.

Quilter and Sons, Waitahuna Gully.—(7/2/1900): Hydraulic elevating. Not at work, being short of water. Three men usually employed when working.

City of Dublin Gold-mining Company (J. Ferris, manager).—(7/2/1900): Ground-sluicing. Blue-spur formation. T drives are put in at the level of the tail-race, and the face brought down with powder. The loosened material is sluiced into the tail-race with water at a pressure of the height of the face, 80 ft. This system leaves a large proportion of the cement underfoot in the trough or gutter of the V-shaped formation, and which can only be treated by elevating, for which purpose there is not pressure and volume of water at present available. The tail-race is about 720 ft. long, having 50 ft. of angle-iron ripples and cocoanut-matting at the top. The rest of the

race is paved with stones, and is cleaned up once a year. As showing the difficulty of saving fine gold with this class of tail-race, at the last wash-up (annual) about 2 dwt. of gold was got in the bottom box of the race (720 ft.). I drew Mr. Ferris's attention to one part of the face which was practically vertical, and looked dangerous. Four men are at work.

Thomson and Party (Norwegian Claim), Waitahuna Gully (C. Thomson, manager).—(7/2/1900): Two elevators in separate paddocks, having separate lines of service-pipes, one 300 ft. head of pressure, and the other 240 ft. Time worked, sixteen hours per day. Water, by a race forty miles long, is brought from Waitahuna heights. The ground has been worked twice previously by hand-labour. There is only sufficient water to work one elevator at a time, so while one is working a paddock the other elevator and plant are being shifted to a new paddock. Sixteen men are employed.

Island Block Gold-dredging and Sluicing Company (W. Lake, manager).—(6/3/1900): One paddock of about an acre being worked. One shift of men picking up and cleaning bottom. One nozzle in use, one elevator 70 ft. and a "shooting-gallery" on the bottom, as the face is dipping from the elevator. At night the water is used for pumping out the old paddock, which is filled up during the day. The water-supply is low, owing to the dry season and the leakage on the line of pipes from the penstock to the claim. The lead joints in use having proved a failure, the new proprietors intend to replace them with flanged joints. Several hundred feet of fluming is also to be renewed, after which it is anticipated that two elevators will be kept going steadily night and day, which will provide employment for twenty men, instead of only six men as at present.

Robert Stewart, Island Block.—(6/3/1900): Cleaning out dam and race, and getting ready to start when water is more plentiful.

Keep-it-Dark Gold-mining Company, Nevis (J. H. Robertson, manager).—(12/3/1900): Sinking and intend to drive and block out on Galvin's Terrace. Shaft down 35 ft., and the party expect to bottom at 70 ft., on the lead being worked in the sluicing claim (Robertson and party's). Six men. In the Nevis the water is frozen for about two months in the winter, so that elevating is impossible, and this claim is proposed to be worked as a stand-by. A shed has been built over the mouth of the shaft, so that the stuff brought up can be stacked, and washed in the spring after the thaw sets in. The party will thus be able to work on their own claims all the year round.

Our Mutual Friend Hydraulic Elevating and Sluicing Company, Nevis (Masters and Adie).—(12/3/1900): Water brought in from Commissioners' Creek, three miles, and from Deep Creek, two miles and a half. Main line, two 9 in. pipes joined at the bottom, each 1,000 ft. in length. Service-pipes, 7 in., under 400 ft. head of pressure. Elevating, 33 ft.; ground dips into the flat, carrying a very good sample of rough gold on the bottom. Four men at work.

Robertson and Party, Nevis.—(12/3/1900): This claim is similar to and next to Masters and Adie's claim. Race is seven miles long. 1,500 ft. of 9 in. pipes are in use. Elevating, 40 ft., under 360 ft. head of pressure.

Roxburgh Amalgamated Gold-mining Company (Limited), (J. H. Waigth, manager).—(17/3/1900): Two paddocks being worked. Two elevators, that in No. 1 paddock having a double lift. First lift, 21 ft., discharging into boxes 130 ft. long by 3 ft. wide. Second lift, 26 ft.; boxes, 84 ft. long by 3 ft. wide. The experience of the manager is that nine-tenths of the gold is saved in the first 50 ft. of the first set of boxes, only 2 dwt. or 3 dwt. being got on the mats of the second-lift boxes at the end of a six-months run. The gold is fine and flaky, resembling bran and pollard mixed, but has been getting rougher of late. The face of the claim is generally about 65 ft. high; 30 ft. of silt on top is stripped and blown back into the old paddocks. The wash runs about 35 ft. deep river-gravels, generally resting on the schist reef. Twenty-two men are employed. This company has a party of four men prospecting at Lake Onslow with boring-rods in a quartz-drift resembling the Matakanui deposit. W. J. Harvard is manager of the prospecting party.

Stewart and Party, Lake Onslow.—(12/3/1900): Hydraulic elevating 35 ft. on the line of drift exposed in the dam by the action of the water baring a face showing clays and gravel. Face, 25 ft.; 3 ft. of surface, alluvial on top. The bottom is a kind of mudstone containing blocks of quartz conglomerate. Water is obtained from the Pinelheugh Mountains. Four men employed when water is plentiful.

Loudon and Party, Roxburgh.—(17/3/1900): Working two claims, one elevating and the other ground-sluicing. Owners are floating the claim into a dredging company.

Big Beach Hydraulic Elevating Company, Shotover.—(26/3/1900): No one about. Not working, owing to shortage of water.

Arrow Flat Hydraulic Elevating and Gold-mining Company, Arrowtown (James Martin).—(27/3/1900): Almost ready for starting work; erecting elevator. Boxes finished, and water ready for use. Race, including siphons, five miles in length. Pressure-line, 1,000 ft. Pipes, 24 in. at top and 18 in. at the bottom; 15 in. and 9 in. driving-lines, under 600 ft. head of pressure. Expect to start in a day or two. This claim takes in the bed of the Arrow River immediately opposite the town, and, as the miners in the early days were unable to bottom in places, rich returns are expected. The race, however, is brought in over very broken country, and considerable difficulty may be experienced in keeping the claim steadily supplied with water.

Dredging.

This branch of mining has now assumed considerable magnitude, and most of the rivers and flats in this district known to be auriferous have been pegged off. Many new companies have been floated for the purpose of working the claims. A large proportion of the claimholders are having their dredges built as rapidly as the congested state of the foundries and engineering-works can supply machinery. Timber for pontoons (principally kauri, hardwood, and ironbark) is arriving somewhat more rapidly than the ironwork, and it occasionally happens that the pontoons are finished several weeks before the machinery comes to hand. There is, however, a tendency on

the part of some of the owners of claims in untried districts to await the result of the work of the pioneer dredges. This is particularly noticeable in the Cardrona Valley and on the upper portion of the Clutha River. These districts have yielded large quantities of gold to the alluvial miner, and in all probability will yet pay dredgers handsomely.

Payable returns of gold have been got by a majority of the dredges working on the "Molyneux" (correctly, the "Clutha") and Kawarau Rivers, and also on the Waipori, Tuapeka, Evans Flat, Shag Valley, Waitahuna, Glenore, Manuherikia, Nevis, and the Southland river-flats. Exceptions are—Macrae's Flat, Enterprise Gully, Naseby, Maniototo, Kyeburn, and Ophir. These dredges are all sold for removal to other districts. The cause of their failure may be debited more to their inablity to treat tight wash than to the poverty of the ground.

The following is a return of dredges, so far as obtainable by me, up to the 31st March: Dredges at work, 79; dredges not at work, 3; dredges undergoing alteration, 1; dredges undergoing removal, 8; dredges building, 105: total, 196.

Accidents at Gold-mines.

No accidents have been reported to me (1st November, 1899, to 31st March, 1900).

Accidents on Dredges.

Adam's Flat.—(30/10/99): A. H. Waddell, engineer, lost the first joint of his right forefinger between the crank and the bed-plate of engines. He was feeling the eccentric strap for signs of heating while the engines were working. I reported this accident specially to you under date of 1st December, 1899.

Mataura Enterprise.—(23/11/99): I reported specially under date of 5th December, 1899. Walter Turner was running one of the side-lines in a small boat. The boat tilted, and Turner was thrown or fell out. He was carried down the river, and, although he managed to get his body on to the tailings-heap several times, the current and drift were so strong that he could not drag his legs out, and was carried down stream about two miles and found drowned. The Coroner's jury brought in a verdict that Walter Turner met his death by accidental drowning, and added a rider that the appliances were deficient for travelling between the bank and the dredge, and also that one of the boats should be always kept at the dredge.

Working Dredges visited by Inspector of Mines, Dunedin.

Name and Situation of Dredge.	Owners.	Dredge-master.	Remarks.	Date of Visit.
Glenore.				
Woolshed	Woolshed Gold-dredging Company	William Mercer ..	Dredge well found; machinery and appliances in good order; pulley on pump-drive requires fencing, which master promised to do	7/11/99
Stirling	Stirling Gold-dredging Company ..	John Nelson ..	No boat; rules not posted; no boat-hooks on dredge; well unfenced, and stream of water falling from a leaky pipe on to the gangway across well, making it slippery; master not on board; wrote him requiring compliance with regulations	7/11/99
Gold Bank	Gold Bank Gold-dredging Company	A. Thomas ..	Gangway required across well, also fence round engine	7/11/99
Adam's Flat, Adam's Flat	Adam's Flat Gold-dredging Company	George Pettigrew ..	Two life-buoys on board, but found them inside engine-house, instead of being in their places at bow and stern	7/11/99
Waipori River.				
Upper Waipori	Upper Waipori Gold-dredging Company	William Redpath ..	Stopped temporarily for repairs; dredge sank 27th July owing to ice being frozen to hull, when thaw set in unequal strain started rivets; silt not yet out of pontoons; two very good boats; dredge in very good working-order	12/12/99
Empire No. 1	Empire Gold-dredging Company ..	G. Larking ..	No boat-hooks or light-lines; two buoys hanging on one nail aft	12/12/99
Empire No. 2	" ..	" ..	No boat-hooks; sleeve required on projecting end of engine crank-shaft. Visited by Mr. Hayes ..	12/12/99
Golden Shore	Golden Shore Gold-dredging Company	J. G. A. Donaldson ..	Dredge and everything about her in excellent order	12/12/99
Success	Success Gold-dredging Company ..	William Hanley ..	One good boat, but no life-line or boat-hook in it; only one life-buoy and one boat-hook aboard; sleeve required on projecting end of crank-shaft	12/12/99
Perseverance	McLeod and party	Thomas Aitken ..	Sleeve required on end of shaft; fly-wheel unfenced; no boat-hooks; no light-lines; no rules posted ..	12/12/99
Waipori Consolidated ..	Waipori Consolidated Gold-dredging Company	J. M. Walker ..	No boat; manager states that he cannot work with a boat owing to paddock being too small; no boat-hooks; only one rail on main fly-wheel fence, which should have two rails	12/12/99
Jutland Flat	Jutland Flat Gold-dredging Company	A. R. Edmonds ..	Dredge and appliances in good order; ground poor; two to three men casually employed making dams to float dredge, and making coal-roads through swamp	13/12/99
Lawrence.				
Evans Flat, Evans Flat ..	Evans Gold-dredging Company ..	T. Gillespie ..	Projecting end of shaft requires sleeve; engine to be fenced, otherwise all in good order; face only 4 ft. deep, and artificial dam required to keep dredge afloat; ground previously turned over by Europeans and Chinese, notwithstanding which dredge getting about 2 oz. weekly	6/2/00
Lawrence (late Balclutha), Tuapeka Flat	Lawrence Gold-dredging Company	A. Wakefield ..	Recently started after renewing dredge throughout, except pontoons, engine, and winches; weekly cost of running, 6 oz.; average time, 130 hours per week	6/2/00
Tuapeka, Tuapeka Flat ..	Tuapeka Gold-dredging Company	John Donaldson ..	Fence required round cranks and governors, and sleeve on end of shaft	6/2/00
Tuapeka Flat, Tuapeka Flat	Harris and party	J. P. Uren ..	One buoy; no light-lines; to protect end of pump-shaft	6/2/00
Klondike, Wetherstone's Flat	Golden Rise Gold-dredging Company	R. Young ..	To fence pump driving-belt; ground worked previously by Europeans and Chinese	7/2/00
Imperial, Waitahuna ..	Imperial Gold-dredging Company	George Scott ..	Only one buoy; no boat-hooks or light-lines; to fence engine-cranks; bulk of claim worked ground ..	7/2/00
Alexandra.				
Golden Beach	Golden Beach Gold-dredging Company	A. McLean ..	Working in bank; life-buoys, &c., on board, but not at stern as they should be; generally in good order. This dredge continues to turn over an enormous quantity of material	14/3/00
Eureka No. 1	Eureka No 1 Gold-dredging Company	Evan Butler ..	Working in mid-river; no life-buoy, boat-hook, or light-line at bows; everything else in good order ..	14/3/00
Earnscleugh No. 1 ..	Earnscleugh No. 1 Gold-dredging Company	C. Weaver ..	To fence fly-wheel of engine	14/3/00
Earnscleugh No. 2 ..	Earnscleugh No. 2 Gold-dredging Company	J. Marshall ..	All in good order; sluicing off 10 ft. of top stuff, silt, in advance of dredge. This dredge has a barge for coaling capable of holding 6 tons, which is a great convenience, and avoids the usual practice of having bags of coal lying in the thoroughfares	14/3/00

WORKING DREDGES VISITED BY INSPECTOR OF MINES, DUNEDIN—*continued.*

Name and Situation of Dredge.	Owners.	Dredge-master.	Remarks.	Date of Visit.
Chicago	Chicago Gold-dredging Company	J. McDonald	Only one buoy on board (forward); 2 ft. width added to each pontoon at Christmas-time, giving this dredge plenty of freeboard	14/3/00
Perseverance	Perseverance Gold-dredging Company	S. Cameron	At work only four weeks, and not yet in good working-order; a new electric-light (Pactolus) self-contained engine and dynamo being installed, which is expected to be a great improvement	14/3/00
Golden Point	Golden Point Gold-dredging Company	G. R. McGregor	To fence elevator driving wheel and belt, and sleeve required on end of shaft; four life-buoys on board; working in bank; tailings becoming troublesome owing to height	15/3/00
Ngapara No. 1	Ngapara No. 1 Gold-dredging Company	Henry Schumann	No boat-hooks in place; all else in good order	15/3/00
Enterprise	Enterprise Gold-dredging Company	J. T. Ryan	Only one boat-hook; to protect clutch-lever; otherwise in good order	15/3/00
Molyneux Hydraulic	Molyneux Hydraulic Gold-dredging Company	J. Dewar	To fence well and stern of dredge; sleeve required end of shaft; boat requires some repairs	15/3/00
Moa	Clyde Gold-dredging Company	W. Nicholson	Sleeve required on main shaft; rail required on elevator gangway; no boat-hooks or light-lines at bow or stern; both boats in paddock on land side of dredge	15/3/00
Bengerburn, Moa Flat	Bengerburn Gold-dredging Company	E. A. Kitto	Stopped owing to main shaft being broken; no life-buoys, life-belts, or boat-hooks on board; no rules posted; one buoy in one boat, but no boat-hook or light-line in her; gave master verbal notice, and also wrote secretary that dredge was not to start till regulations were complied with; visited dredge again on the 17th March, 1900, and found that my requirements of the 9th January had been complied with	9/1/00 and 17/3/00
Sunlight, Island Block	Sunlight Gold-dredging Company	G. S. Hall	Starting-wheel on main shaft requires to be fenced; second boat old and unsafe	8/1/00
Roxburgh.				
Dunedin	Dunedin Gold-dredging Company	W. T. Weir	One boat requires some repairs; generally well up to requirements	17/3/00
Manuherikia.				
Manorburn	Manorburn Gold-dredging Company	H. Leicester	Putting in new pump and screen; copy of rules wantonly defaced with dabs of red paint; only one boat-hook and no light-lines; stern arrangements require to be attended to; ladders of gangway to be renewed	29/3/00
Morning Star	Morning Star Gold-dredging Company	E. Ryan	Only one worn-out life-buoy on board, one light-line, and no boat-hooks; gangway and rail required at end of screen	29/3/00
Springvale (late Hyde's)	Springvale Gold-dredging Company	K. A. Denniston	Just started; not yet in working-order	29/3/00
Galtee More	Galtee More Gold-dredging Company	J. Cunningham	Absolutely no compliance with rules; no rules posted; no life-buoys, boat-hooks, or light-lines, and no boat; to put sleeve on end of crank-shaft; fence-rail required alongside driving-belt, and only a narrow plank across well, which is unfenced	29/3/00
Nil Desperandum	Nil Desperandum Gold-dredging Company	D. McMath	Putting on new screen; no rules posted; no life-buoys, boat-hooks, or light-lines, and no boat; to protect end of crank-shaft and fence driving-belt	29/3/00
Chatto Creek	Chatto Creek Gold dredging Company	G. P. Blue	Only one buoy and one boat-hook; no light-lines; rail required at stern; boat on river away from dredge	..
Cromwell.				
Electric No. 1, Kawarau River	Junction Electric Gold-dredging Company	Archibald Steel	To renew boat-hooks, light-lines, life-buoys, and to fence main driving-pulley; working in slack water owing to current being too strong for dredge to cope with	8/3/00
Magnetic, Kawarau River	Magnetic Gold-dredging Company	J. F. Kitto	Dredge and appliances in good order	8/3/00
Ranfurly, Kawarau River	Electric Gold-dredging Company	James McGeorge	No boat-hooks or light-lines bow or stern; no boat-hooks in boats	8/3/00
Maori, Clutha River	Maori Gold-dredging Company	Frank Kitto	No boat-hooks or light-lines; to fence bevel-gearing and well; narrow and inefficient gangway for coaling	8/3/00
Junction Electric, Kawarau	Junction Electric Gold-dredging Company	A. Ross	No life-buoys in boats; no boat-hooks or light-lines bow or stern; well requires fencing; rail required at stern near streaming-down box; and dynamo-shaft to be covered. Wrote Mr. Ross on the 4th April, 1900, requiring him to attend to above immediately, as his dredge is working in one of the strongest "rips" on the river	13/3/00

Hartley and Riley, Molyneux River	Hartley and Riley Gold-dredging Company	George McLay ..	Dredge and appliances in good order	13/3/00
Alpine, Molyneux River ..	Alpine Gold-dredging Company ..	..	Dredge being shifted up stream; all hands being occupied thereat	13/3/00
Golden Terrace, Shotover River	Golden Terrace Gold-dredging Company	W. Shore	Two life-belts, but only one buoy and one boat-hook. This dredge has excellent gold-saving appliances, which are necessary owing to the gold being very fine. Tables have 336 square feet of spread	26/3/00
Shotover (late Golden Terrace No. 1), above Lower Shotover Bridge	Shotover Gold-dredging Company	..	Recently bought, and being shifted on to claim	26/3/00
Shag River.				
Inch Valley, Dunback ..	Inch Valley	George Bennett ..	Projecting sleeve required on end of crank-shaft, and air-pump plunger to be covered; no boat-hooks or light-lines	27/2/00
Macrae's Flat.				
Macrae's Flat	Macrae's Flat Gold-dredging Company	..	No one about, directors having stopped dredge owing to gold got not being sufficient to pay working-expenses	2/3/00
Matakanui.				
Klondike	Klondike Gold-dredging Company	E. Lawson ..	New dredge on the point of starting	15/1/00
Gore.				
Mataura Enterprise ..	Graham Brothers	T. A. Graham ..	Dredge very comfortable and well found generally. Boats—one heavy coal-punt and one small skiff, which I condemned as being unfit for the work. This was the boat that Winchman Turner fell out and was drowned (22nd November, 1899)	2/12/99
Gold Creek, Chatton ..	Gold Creek Gold-dredging Company	W. Robins ..	Driving-pulley of pump requires fencing	24/1/00
Nevis.				
Ngapara No. 2	Ngapara No. 2 Gold-dredging Company	John McLean ..	No boat-hooks; only one buoy; boat old and almost done	12/3/00
Nevis	Nevis Gold-dredging Company ..	A. Robertson ..	Only one buoy; no light-lines or boat-hooks; to protect bevel-gearing, fence driving-pulley and belt, and also winch-drive; boat lying on heaps of tailings away from the dredge	12/3/00
Carrick	Carrick Gold-dredging Company ..	J. Thomson ..	Not working; no one about	12/3/00
Success	Success Gold-dredging Company ..	..	Not working owing to broken winch-shaft; no one about	12/3/00

List of Dredges Building, Working, under Removal, and Standing.

The following is a list, up to date, of the dredges in the Southern Mining District, and the locality where the dredge is situated:—

Dredges Building—Otago.

On the Clutha River.

Lioness, Beaumont.
Tyson's Beach, Beaumont.
Paul's Beach, Beaumont.
Beaumont Lead, Beaumont Flat.
Golden Reward, Beaumont.
Golden Gravel, below Beaumont Bridge.
Great Beach, Rankleburn.
British Lion, near Island Block.
Golden Mile, above Beaumont Bridge.
Golden Run, adjoining Island Block.
Golden Horseshoe, at the Island Block.
At Miller's Flat—
  Golden Bed.
  Majestic.
At Moa Flat—
  Moa Flat.
  Golden Chain.
  Excelsior.
  Gibbs Beach.
At Dumbarton Rock—
  Gold King.
  Gold Queen.
A tRoxburgh—
  Endeavour.
  Teviot.

In the Alexandra-Coal Creek Gorge (Clutha River).

At Coal Creek—
  Gold Deposit.
  Golden Elbow.
  Long Valley.
  Golden Molyneux, above Coal Creek.
  Fourteen-mile Beach (Electric), above Coal Creek.
  Sixteen-mile Beach, above Coal Creek.
  Golden River, above Coal Creek.
  Golden Falls, above Coal Creek.
  River Molyneux, below Alexandra.
  Bendigo, below Alexandra.
  First Chance, below Alexandra.
  Sailor's Bend, below Alexandra.
  Manuherikia, below Alexandra.
At Alexandra—
  Alexandra Lead.
  Fraser Flat.
  Earnscleugh (Electric) No. 3.
  Glasgow (Sandy Point).
  Dunstan Lead.
  West Matau.
At Clyde—
  Vincent Extended.

On the Molyneux Gorge (Clyde to Cromwell—Clutha River).

Cairnmuir.
Dunstan Pioneer.
Monte Cristo.
Boundary Creek.
Halfway House.
Kelly and Casey.
Great Central.
Alpine Consols.
Alpine No. 2.
Central Electric.

On the Clutha River (Upper Part).

Royal Maori, Cromwell.
Golden Standard, Luggate.
Pioneer Eureka, Lindis.

On the Kawarau River.

At Cromwell—
  Electric Extended.
  Richards's Beach.
  Cromwell.
At Kawarau Gorge—
  Second Magnetic.
  Voltaic.
  Upper Magnetic.
  Gentle Annie.
  Meg and Annie.
  Grand Junction.
  Kawarau Consolidated.
  Gibbston.
  Merrimac.
At Gibbston—
  Galvanic.
  Metallic.
  Eclipse.
At Kawarau Bridge—
  Kawarau Bridge.
  Arrow Junction, above.
  Kia Ora, above.
  Golden Vein, above.
  Morven Ferry, above.

On the Shotover River.

Arthur's Point, commencing at Arthur's Point Bridge.

On the Dart River.

Dart River, twenty-five miles above head of Lake Wakatipu.

On Bald Hill Flat.

Bald Hill Flat.
Last Chance.

On the Manuherikia River.

Golden Link, Alexandra.
Olrig, Springvale.

In the Cardrona Valley.

Tacon's Cardrona.
Cardrona No. 1.
Cardrona Valley.
White Star.

On the Bannockburn.

At Bannockburn—
  Bannockburn Creek.
  Shepherd's Creek.
  Smith's Creek.

On the Nevis.

Ngapara No. 3.

At Matakanui.

Blue Duck.

At Naseby.

Golden Spec (late Maniototo), Spec Gully, Naseby.
Spec Gully, at Spec Gully, Naseby.
Naumai, Upper Kyeburn.

On the Taieri River.

First Taieri (late Kyeburn), Taieri River.

On the Tokomairiro River.

River-bank, South Branch.

On the Waipori River.

Waipori Gold Lead (late Record Reign), Berwick.
Enfield, Post-office Creek (or Verter Burn).
Lower Enfield, Post-office Creek.
Big Flat, Verter Burn.

On the Shag River.

At Inch Valley—
  Inchdale.
  Incholme (late Mount Ida).
  Dunback.

On the Maerewhenua River.

At Livingstone—
  Maerewhenua.

Dredges Building—Southland.

On the Little Waikaka River.

Waikaka Forks.
Waikaka Queen.
Waikaka United.
Globe (late Victoria).
Premier Waikaka.

On the Waikaka River.

Paterson's Freehold.
Celtic.
Glen-iti.
Sheddon's Freehold.

On the Waikaia River.

Dome Creek.
Garvie Burn.
Muddy Creek.
Hazeldene.

On the Mataura River.

At Otama—
  Otama (late Enterprise Gully).
At Charlton Creek—
  Great Charlton.
  Central Charlton (late Ophir).
  Lady Charlton.
  Hokonui Valley.

On the Waimumu River.

Eureka No. 2.
Waimumu Queen.
At Colac Bay—
  Great Western.

Working Dredges—Otago.

On the Molyneux.

Sunlight, near Island Block.
At Miller's Flat—
  Golden Gate.
  Pringle's Dredge.
  Otago.
  Golden Treasure.
  Miller's Flat Electric (late Edina and Sandhills dredges).
At Moa Flat—
  Ettrick.
  Bengerburn.
At Roxburgh—
  Dunedin.
At Alexandra—
  Clyde (Moa Dredge).
  Molyneux Hydraulic.
  Golden Beach.
  Eureka No. 1.
  Earnscleugh No. 1.
  Earnscleugh No. 2.
  Chicago.
  Perseverance.
  Golden Point.
  Ngapara No. 1.
  Enterprise.
At Muttontown Gully—
  New Alexandra.
  Matau.
At Clyde—
  Unity.
  Vincent.
At Riley's Beach (below Cromwell)—
  Alpine.
Below Cromwell—
  Hartley and Riley.

On the Kawarau.

At Cromwell—
  Junction Electric.
  Electric No. 1.
  Lady Ranfurly.
  Magnetic.
On the Shotover—
  Lower Shotover.
  Golden Terrace.
On the Nevis—
  Ngapara No. 2.
  Nevis.
  Carrick.
  Success.

On the Clutha.

At Lowburn—
  Maori.

On the Manuherikia.

At Alexandra—
  Manorburn.
Above Alexandra—
  Morning Star.
At Springvale—
  Springvale (late Hyde's).
  Galtee More.
At Chatto Creek—
  Nil Desperandum.
  Chatto Creek.
At Branch Creek, Cardrona Valley—
  Rolling Stone.

On the Waipori.

Jutland Flat.
Upper Waipori.
Waipori Consolidated.
Success.
Perseverance.
Empire No. 1.
Golden Shore.
Empire No. 2.
At Matakanui—
  Klondyke, Matakanui.
At Evans Flat—
  Evans Flat, on Evans Flat.
At Tuapeka Flat—
  Tuapeka Flat, on Tuapeka Flat.
  Tuapeka, on Tuapeka Flat.
  Lawrence, on Tuapeka Flat.
At Wetherstones—
  Golden Rise.
At Waitahuna—
  Havelock.
  McCormack.
  Imperial.
At Glenore—
  Gold Bank.
  Stirling.
  Woolshed No. 1.
At Adams Flat—
  Adams Flat.
At Dunback—
  Inch Valley.

Working Dredges—Southland.

At Gore—
  Mataura Enterprise.
At Chatton—
  Gold Creek Dredge.

On the Little Waikaka.

Woolshed No. 2.
Ibbotson and party.
McGill and party (Little Waikaka).

On the Waikaka.

Perry's.
Record.

On the Waikaia.

Nugget.

On the Charlton Creek.

Charlton Creek.

On the Waimumu.

Waimumu.
Waimumu Extended.
Waimumu Central.

On the Waiau River the Belmont dredge is being altered from a suction to a bucket dredge.

DREDGES UNDER REMOVAL.

Record Reign, from Tuapeka to Berwick.
Ophir, from Black's to Central Charlton.
Turakina pontoons, to Voltaic prospecting.
Pontoons, Victoria Dredge, below Kawarau Bridge, to Kawarau Consolidated, and machinery to Reeves's Proprietary, West Coast.
Mount Ida, from Kyeburn River to Inchholme, Shag River.
Kyeburn dredge, from Kyeburn to First Taieri Claim, Rock-and-Pillar district.

DREDGES UNDER REMOVAL—*continued.*

Enterprise Gully, from Naseby to Otama, Mataura.
Maniototo, from Naseby to Spec Gully.
Victoria, Alexandra, to Globe, Waikaka.
Endeavour, Roxburgh, to Glen-iti, Waikaka.

DREDGES STANDING.

Adams's, at Tuapeka Mouth.
Macrae's Flat, at Macrae's Flat.

WORKING DREDGES NOT VISITED.*

At Waitahuna—
Havelock.
McCormac's.
At Miller's Flat—
Golden Gate.
Pringle and party.
Otago.
Golden Treasure.
At Moa Flat—
Ettrick.
At Muttontown Gully—
New Alexandra.
Matau.
At Clyde—
Unity.
Vincent.
At Cardrona—
Rolling Stone.
At Waimumu—
Waimumu
Waimumu Extended.
Waimumu Central.
At Waikaia—
Nugget.
At Waikaka—
Woolshed No. 2.
Record.
Ibbotson's.
Perry's.
Little Waikaka.
Charlton—
Charlton Creek.

I have, &c.,
The Under-Secretary for Mines, Wellington. E. R. GREEN, Inspector of Mines.

* Several of these dredges are new. Others were visited by me during the year.—J. HAYES, Inspecting Engineer.

WARDENS' REPORTS.

Mr. Warden HUTCHISON to the UNDER-SECRETARY for MINES, Wellington.

SIR,— Warden's Office, Auckland, 30th April, 1900.

I have the honour to transmit herewith the various annual returns in connection with the Puhipuhi Gold-mining District.

From these it will be sufficiently apparent that this field has made no progress during the year. The only claims now in existence, indeed, are those owned by the Hampton Plains Company, a purely English company which took up these claims in succession to series of owners who held them apparently for purposes purely speculative. And this company, although it took up the claims on the 19th July, 1898, and has not asked for protection, has not, so far as I can discover, done any effective work upon the ground. The statement of the attorney in New Zealand is that "some 13 tons of ore have been extracted and sent to England for treatment, which gave results varying from 5 dwt. to 1 oz. of gold and 10 oz. to 25 oz. of silver to the ton." The company is evidently in the experimental stage only. It employs only from eight to ten men, instead of seventy-four men as prescribed by regulations.

A number of miners' rights has been issued, but there is reason to believe that these have been taken out by persons (gum-diggers and others) simply wishing to qualify themselves to take up residence-sites.

I have, &c.,
T. HUTCHISON, Warden.

The Under-Secretary, Mines Department, Wellington.

Mr. Warden BUSH to the UNDER-SECRETARY for MINES, Wellington.

SIR,— Warden's Office, Thames, 25th May, 1900.

I have the honour to furnish herewith the usual annual report on the Hauraki Goldfields.

It affords me very great pleasure to report a considerable increase in the yield of gold for the year ending December, 1899. The Waihi Mine produced gold of the value of £285,381, as against £272,688 in 1898; the Waitekauri, £74,276, as against £66,585 in 1898; the New Zealand Crown Mines, £67,165, as against £55,488; the New Zealand Talisman, £36,246, as against £32,648; the Woodstock, £17,088, as against £15,692; the Waihi-Silverton, £15,498, as against £11,501; the Hikutaia Gold Syndicate, £300; Jubilee tributers, £925; Waitekauri Extended, £3,749; Te Aroha, sundries, £1,865; the Alpha, £777; and the Komata Reefs, £7,659, which is a decrease of £10,136, but it must be explained that this company's yield only represents that for three months; during the rest of the time the battery has been shut down, and a low-level tunnel driven some 3,000 ft. No doubt during the current year this mine will again take its place amongst the gold-producers of the Upper Thames portion of the field.

The various mines at the Thames produced gold to the value of £66,553 during 1899, the Tararu Creek Gold-mining Company being responsible for £16,525, the Moanataiari and Kuranui-Caledonian tributers securing £6,748 and £6,694 respectively. For the same period the Waiotahi had £4,299; Fame and Fortune, £1,889; and the Eclipse, £1,174. The Whangamata Gold Corporation netted £7,361 in 1899.

The Coromandel mines generally have fallen behind with their gold, the total value for 1899 being £43,144, being £4,340 less than what was produced by the Hauraki Company and the Royal Oak Mine alone in 1897. The Hauraki Gold-mining Company are credited with £12,819; the Royal Oak with £7,088; the Kapanga with £4,903; Hauraki Associated with £1,801; Bunker's Hill with £1,733; Scotty's with £1,613; Mariposa with £2,414; the Irene with £1,463; the New

Four-in-hand with £4,235. This mine is opening up well, and is coming to the front. It is just paying its first dividend of 3d. per share. The return from the Kauri Freeholds Gold Estates Company totals up to £12,860, which is scarcely up to expectations.

The Ohinemuri County is credited with £510,931, and the Thames County with £56,304, out of the total of £641,150, which exceeds the value of gold produced in 1898 by £109,566.

The Coromandel County is entitled to credit of the Kauri Gold Estates Company, which makes the total £56,304.

Vast sums have been spent in machinery of all descriptions, and in construction of water-races. A great amount of development-work has been carried on during the year all over the field, and one or two mines have had small test crushings with their new batteries, notably the Broken Hills, at Tairua; the Grace Darling, at Waitekauri; and the Eclipse, at the Thames.

The Thames-Hauraki Goldfields (Limited), having undertaken the duty of erecting the pumping machinery for testing the deep levels at the Thames proper, have proceeded with that work, and are now down to their old workings, which had to be abandoned in consequence of the inflow of water. The old workings are being thoroughly repaired and cleaned out preparatory to work being resumed. It is to be hoped the next report will chronicle the success of the deep-levels scheme.

The vexed question of the drainage assessment made by the Thames Drainage Board, which was appealed from, was definitely settled on the 15th instant in the Warden's Court, all the companies but one coming to an arrangement satisfactory to themselves. The dissenting company's representatives were not in a position to accede to the proposals, and therefore had to accept the inevitable.

The only thing in the shape of a new rush was the pegging-out of claims on the Kapowai and Rangihau Blocks, near Mercury Bay, on Crown freehold, the subject of leases to the Kauri Timber Company. Good gold has been discovered in some of these claims near the surface, but time has not admitted of any extent of development taking place; therefore the permanency or otherwise of these mines is at present difficult to predict.

Short comments on the various mines in existence at present in the district are forwarded, as under:—

Thames.

Tapu District.

Mahara Royal (Limited).—A large amount of work has been done in the Royal section of this mine. The drive on the reef at the low level has been considerably extended and the reef stoped out, but unfortunately the ore is of a low grade. Several leaders have been unearthed in the other sections of the mine, but after being tested were found to be small and of an unremunerative character, and driving was therefore discontinued. Gold of the value of £3,207 has been won during the year.

Bullion Gold-mining Company (late Sheridan).—The Sheridan Gold-mining Company having gone into liquidation, after having spent some £5,000 without any result, this mine was sold at public auction, and purchased by Mr. H. H. Adams, who formed the present company. After doing a considerable amount of prospecting without discovering any payable reefs the company ceased operations, and the mine was let on tribute to Charles Manuel and party. The tributers were not long at work before a "patch" was discovered, which has turned out very well indeed. The return for the year was 389 oz. 15 dwt., valued at £1,210 12s. 6d.

A few small claims have been working, but nothing was discovered.

Waiomo.

Monowai Gold-mines (Limited).—The treatment of the ore having proved unsuccessful, this mine was protected during the greater part of the year. 2 tons of ore was sent to Dapto, New South Wales, and there successfully treated, a yield of £10 per ton being obtained. Encouraged by this result the company have decided to resume operations. Improved concentrators (Union) will be erected and the ore reduced to concentrates, and shipped for final treatment to New South Wales. It is to be hoped that at last a successful means of treating the ore has been discovered, and that the company will be rewarded for its perseverance.

Broken Hill Gold-mining Company.—Very little work has been done in this mine. The ore is refractory and difficult to treat. Two sacks were sent to San Francisco, America, and treated at the Union Ironworks. The report supplied to the company states, "The ore has been treated by concentration and cyaniding the tailings, cyaniding the ore direct, and roasting and pan-amalgamation. Either of these treatments will treat the ore satisfactorily." The Rev. Joseph Campbell also reports that he treated small parcels of the ore successfully at the New Montezuma works, Te Aroha, by the hyperphoric process. The Smelting Company of Australia, at Dapto, New South Wales, also treated a small parcel, and reports that there should be no difficulty in treating the same in bulk. The company has not yet decided which process it will adopt. No doubt when the process has been decided upon work will be vigorously carried on. The ground contains large lodes which should prove payable with a suitable process.

Puru.

Puru Consolidated Gold-mining Company (Limited) is the only mine at work in this locality. Very little has been done by the company, and at present the mine is let on tribute. Although no ore has been crushed, a considerable quantity is to grass, and will soon be treated.

TARARU.

Eclipse (Limited).—This mine has been systematically worked during the year. A shaft was sunk 120 ft., and the main reef driven on for a considerable distance, and fairly good ore taken out. The ten-stamp, water-race, and aerial tramway were completed and crushing commenced in November. The winding-engine and gear erected at the shaft are working well.

Chicago.—This mine has been let on tribute, but I do not think the tributers have been successful in finding anything payable.

Iron Cap.—A quantity of quartz has been taken out and stacked, awaiting the construction of a road by which to convey it to the battery. The ore is said to be payable, but so far no large quantities have been treated. The small parcels gave encouraging results, and no doubt if a good road existed we should hear more of this mine.

Tararu Creek Gold-mining Company (Limited).—The mill belonging to this company has been worked constantly during the year treating ore obtained from the mine. Some 16,000 tons of quartz has been treated for an average yield of £1 per ton. The method of treatment is by wet crushing, amalgamation, and cyanide. It is intended to increase the number of cyanide-vats, with the addition of a filtering process, which should increase the percentage saved. The company deserve to succeed, for, ever since it commenced operations in 1895, it has always employed a large number of men, besides having erected a new mill in place of that burnt down. Up to date the company has treated 31,114 tons of quartz for a return of £32,163.

Kuranui Gold-mining Company (Limited).—The mine owned by this company has been prospected during the year, and some parts let on tribute. The company has been engaged in opening up Barry's reef in the direction of the Deep Levels section. The prospects are such as to lead the manager to hope that an important development may be met with later on, as the drive is now nearing the spot where good gold was discovered in former days.

New Alburnia Gold-mining Company.—This company has had protection for its holding for the past twelve months. Work would have been continued, but the capital of the company was well-nigh exhausted. Some large shareholders are indebted to the company in something near £8,000 for unpaid calls, and proceedings are being taken in England for the recovery of the same. Should this amount be recovered it is intended to continue operations. This is looked upon by most old miners as a most likely piece of ground, and many would like to take it and the battery on tribute.

The Tudor, Golden Drop, and Darwin Claims have been at work with two men each, but nothing of importance has been found.

New Whau Gold-mining Company (No Liability).—Prospecting-works have been going on during the year. The Sons of Freedom reef has been opened up, and in some places quartz showing gold has been found. The old Sons of Freedom tunnel has been repaired, and a new truck-road laid down a distance of 1,250 ft. Driving operations on the reef at this point are being carried on with encouraging prospects.

New Moanataiari Gold-mining Company (Limited).—This company has expended some £48,000 in opening up and developing the ground above the 400 ft. level. The results have been very disappointing and discouraging. Numerous reefs were opened up, but the great bulk of the quartz proved unpayable, varying from 1 dwt. to 5 dwt. per ton; and, as the cyanide process proved a failure, the extraction by amalgamation did not pay for treating the dirt. A large number of tributers are working on the small branch leaders, of which a great number exist, and which it would not pay the company to work; but, although some parties have done fairly well, the majority have not earned current wages.

Kuranui-Caledonian Gold-mining Company (Limited).—The company has been doing very little work itself, but a large number of tributers are employed in the ground from the 400 ft. level upwards, and some of the parties have done very well indeed. The tributes are worked under the sliding-scale, which at first caused considerable agitation, but it is now working satisfactorily, if the number of agreements entered into is any criterion.

Waiotahi Creek.

Waiotahi Gold-mining Company (Limited).—This old mine still continues to pay dividends. During the year £900 has been divided, making a sum of £36,450 paid since its formation some twenty-three years ago. The reefs are small, and it is by systematic and careful working that this very satisfactory result has been achieved.

Nonpareil.—The Imperial Gold-mining Company were working this ground until August last, but the returns were not sufficient to pay, and it was decided to sell the ground by auction. The mine was purchased by Mr. A. Greenslade on behalf of a syndicate of local people, who have let the ground to tributers, who have been doing fairly well.

Fame and Fortune Mine (Limited).—This mine has been taken over by the above-named company, formed in England. A considerable amount of prospecting-work was done by Mr. William Vincent, whose attorney in New Zealand is Mr. Edward Kersey Cooper. The mine has been carefully examined, with a view to determining the mode of future operations. A good class of country has been opened up, and payable ore may be found at any time.

Other small claims have been worked, but little gold found.

Victoria Gold-mining Company, No Liability (Victoria and Favourite Special Claims).—This company have lately acquired the Favourite Special Foreshore Claim, which adjoins it on the seaward side. It is intended to put down a bore in the latter for the purpose of ascertaining the nature of the country on the seaward side of the Moanataiari slide. It is thought that the Shotover, Kuranui-Caledonian, and Prince Imperial reefs carry out to the sea through the claim, and if the class of country found in the bore is favourable the company will work it by means of drives

from the shaft in the Victoria Claim. There seems to be no reason why the reefs mentioned, as well as many smaller reefs, should not continue out to sea and carry gold. The developing of the foreshore under the sea is of very great importance to this portion of the field. The company has done little work, but there has been a fair number of tributers employed.

May Queen Hauraki (Limited).—A large amount of important work was done in this mine during the year. The Thames-Hauraki Company having commenced operations in January, the company was enabled to commence sinking winzes on the new lode in the Saxon section at the No. 6 level. Work was also resumed at the sinking of the main shaft, which was sunk to a depth of 709 ft., when it was found that the new pumps no longer drained the ground, consequently work had to be stopped. Although the Hauraki pump-shaft is 292 ft. below the level of the May Queen water, so dense is the country between the shafts that the water from the May Queen does not find its way into the Hauraki shaft. In December last it was found necessary to erect a Cameron pump for the purpose of keeping the water down and preventing the flooding of the No. 7 level. This pump has been constantly at work since. At first the water was easily kept down, but when the No. 7 level was connected with No. 6 the water from the latter level found its way into the former, and at present it is working two hours every shift. In the May Queen section the main shaft has been sunk 190 ft., a crosscut to No. 4 and north-west lodes driven a distance of 366 ft., the chambers at No. 6 enlarged, the No. 4 lode driven on 350 ft. east and 110 ft. west, the north-west lode driven on 150 ft., and a winze on No. 6 level sunk 120 ft. A block of ground 460 ft. by 110 ft. high has been opened up, and some 900 odd tons of good ore taken out. A shaft in the Saxon section has been sunk 94 ft. Two winzes on the No. 1 lode and one on the new lode have been also sunk. No. 2 shaft was sunk from a chamber on the Saxon No. 1 lode. The head-gear and pulleys are placed in a rise above, and the winding-engine in a crosscut. The engine has two high-pressure cylinders, and is driven by compressed air supplied by an air-compressor at the May Queen shaft. In the Cardigan section highly payable ore has been found in the drive on No. 2 lode. The company has made arrangements with the Thames-Hauraki Company to construct a drainage crosscut to connect with the Queen of Beauty shaft. The work will commence as soon as the drainage-assessment difficulty is settled. When this work is completed the May Queen Company can cease pumping on their own account and start at their No. 8 level. It will also reduce the cost of pumping from the old pump, by causing the water to flow to the new one, without materially increasing the costs of pumping from it.

Thames-Hauraki Goldfields (Limited).—The Queen of Beauty shaft has now been enlarged and cleaned out to the bottom of the old shaft, 750 ft. For the future the sinking will be in new ground. The crosscut at the 540 ft. level is being retimbered and cleaned out, and operations on the large reef known as the Vanguard will be commenced as soon as it is completed. The crosscut is 950 ft. long, and of this, 620 ft. have already been put in repair. When this company get fairly to work on the Vanguard reef—which, when the old company ceased operations through the breaking-down of the pumping machinery, was giving handsome returns—I have no doubt that a new era of prosperity will set in at the Thames. On the successful development of the deep levels of this portion of the field depends, to a large extent, the future of the Thames proper.

Karaka (Limited).—The reefs in this mine, called No. 1 and No. 2, have been driven on a distance of 200 ft. and 450 ft. respectively. The ore found is of low grade.

Adelaide Mine.—Two men have been employed during the year repairing and cleaning out the old levels, and three men on tribute have been working on small leaders. A little gold has been won.

May Queen Extended Gold-mining Company (No Liability).—During the early part of the year work was principally confined to putting in prospecting-drives, but nothing was found. A shaft is now down 100 ft., and it is intended to sink it another 70 ft., and then to open out. Several reefs traverse the ground, from two of which good returns were obtained in the upper level. A small plunger pump keeps the shaft dry.

Occidental Gold-mining Company (No Liability).—This company is engaged driving the North Star tunnel, which is now traversing a good class of country, for the purpose of testing the reefs at the low levels. It is intended to continue the drive 1,500 ft. Good returns were obtained from these reefs in the upper levels.

Fortuna Hauraki (Limited).—The company did a great deal of work during the first few months on the reefs at No. 2 and No. 3 levels, but the ore broken out was found to be unremunerative, and operations ceased. The mine is now under protection, pending advice from Home as to what shall be done in the future.

Ethel Reefs Gold-mining Company (Limited).—Work has been principally in the Anchor Special Claim, through which several reefs run. The largest, the Jupiter, is 40 ft. in width, and contains quartz heavily charged with iron-pyrites, antimony, and zincblende, but of low grade. There are also several small but rich leaders from which specimens are obtained. The Mascotte Special Claim is under option to this company, and two men have been constantly engaged in prospecting. I understand the company intend to purchase the claim.

Kirikiri.

The Horse-shoe, Filly, and Chester Special Claims have been all worked by Mr. M. Fleming and party. A four-stamp mill was erected, and 54 tons of quartz from all parts of the mine treated for a return of 139 oz. 8 dwt.

Puriri.

Puriri Gold Estates (Limited).—A considerable amount of work has been done in this mine, but no payable ore has yet been discovered.

Orion Gold-mining Company (Limited).—This company erected an aerial tramway about a mile long, with hoppers, &c., and conveyed to the battery about 207 tons of quartz, which gave a return of 59 oz. 3 dwt. only.

Omahu.

Sheet Anchor Special Claim.—The well-known prospectors, Tilsley Brothers, took up this claim early last year, and have done a considerable amount of work. A trial crushing at the School of Mines gave an excellent return. A two-stamp battery was erected, and 33¼ tons of quartz treated for a return of 291 oz. of bullion, valued at £202 5s. 5d. It is the intention of the owners to increase their crushing-power by ten stamps.

Klondike.—The owners, Messrs. Cumming and Odlum, have done a considerable amount of prospecting on the surface. Gold has been found in the loose soil on the surface. A 3 ft. reef was discovered, which contained a fair percentage of gold. Mr. B. M. Myers, of Auckland, has the formation of a company in hand to work the mine, but up to the present has not met with much success.

Neavesville.

Golden Belt Gold-mining (Limited).—This company own the Golden Belt, Venus, and Arrow Licensed Holdings. The ground has been worked more or less for the last twenty years by the McLiver Brothers, and at times good returns were obtained. The company has been engaged in repairing and cleaning out the old levels. When this has been done it is intended to vigorously work the ground. The reef is of a fair size, and with careful treatment should be made to pay.

Tairua.

Tairua Broken Hills Gold-mining Company (Limited).—This ground was formerly held by the Broken Hills Gold-mining Company (Limited), formed in London, but, the capital having been exhausted, and London shareholders discouraged by the prospects, it was sold at auction, and purchased by the syndicate who formed the present company. The twenty-stamp battery purchased with the mine was completed and the reef opened up. It was found to be about 26 ft. in width, and from assay-tests judged to be payable. Some 600 tons was put through, but, as the return was only 196 oz. of bullion, it was decided to cease crushing and to erect vats to treat tailings by cyanide. This work is now going on, and will shortly be completed. If this company succeeds, many other claims in the vicinity will be taken up again and prospected.

Pakirarahi.

Chelmsford Gold-mining Company.—This company is working the Chelmsford Special Claim, situated on the Kauri Timber Company's freehold. During the boom the ground was marked out and applied for, but, the Kauri Timber Company objecting, no titles could be granted. This company has found five reefs carrying payable ore, a trial crushing of 1 ton having given a return of £13, and another ton of £5 10s. Both parcels were treated at the School of Mines, Thames. A ten-stamp mill with grinding- and amalgamating-pans (Fraser's) is now being erected. The prospects of this mine are encouraging, and no doubt more ground would be taken up if the land was subject to the mining-laws.

The Golden Hill, Gem, Myosotis, and several other claims are being prospected. In most of them reefs have been found which give good prospects. The ground comprised in the claims last mentioned was the bone of contention for so long between the Kauri Timber Company and the prospectors, and finally surrendered by the former. Now that the land is open for mining there does not seem to be the same anxiety to take it up, while those claims which have been granted are not very vigorously worked.

Wharekawa.

Whangamata Gold Corporation (Limited).—The company has done an immense amount of work. The mine is well opened up, and good ore is being obtained. The reduction-works were completed and started in June last. Since then 5,495 tons of ore has been crushed for a return of 8,605 oz. of bullion; value, £10,610. The ore is crushed by two Krupp mills, and then treated by cyanide.

Ohui.

A few men are working in this district, but no payable ore has yet been discovered.

The Maori Dream Proprietary went into liquidation, and its claim was forfeited.

The Wentworth Mine, owned by the Hauraki Peninsula Exploration Company (Limited), has been well opened up. The reef, which has been cut in four different levels, is said to be payable. An experimental plant consisting of Lamington balls is now nearly complete, and crushing will commence soon. If this plant is not a success stamps will be erected, provision for which has already been made. A water-race 67 chains and tramway 23 chains have been constructed.

UPPER THAMES.

Karangahake.

New Zealand Crown Mines.—This is one of the most important and consistent gold-producing mines in the peninsula. For the past six months its gold return has averaged between £4,800 and £5,350, notwithstanding the fact that the battery has during that time been compelled, for want of water-power, to crush with half its stamp-power. The shortness of water during the long dry season has been very much felt by the miners generally in this portion of the field. The early advent of the railway to Karangahake will prove a great boon to the mining community, as it will enable the company to supplement their water-power with steam. There are very extensive ore-

reserves in this mine, which will keep its eighty head of stamps, when the additional twenty are erected, fully employed for the next thirty years. The mine is extensively developed, and it would be a very long day's walk to go over the whole of its underground workings. This company have spent a large sum on machinery. The whole of the hauling in the underground workings is done with compressed air. For this and other purposes a very extensive air-compressing plant has been erected in the Waitawheta Gorge. Further pumping machinery capable of lifting 300 gallons per minute from a depth of 1,000 ft., at a maximum speed of eleven strokes per minute, is now on the way out from England The management have adopted electricity to explode the explosives, in place of the old method in the shaft-workings. This is not only a most efficacious plan, but it reduces the risk of accidents to a minimum, and I am told miners, once understanding this method of exploding their charges, prefer it to that so long in vogue. It would be well if electricity were more used for this purpose, if for no other reason than as a precaution against accidents. This mine is earning considerably more per month than pays its working-expenses. A new tram-line is being constructed, and when completed it is proposed to haul the ore from the mine to the reduction-works with a locomotive instead of horses as at present.

Woodstock Gold-mining Company.—This company's mine has so far been somewhat disappointing in the returns received, which have fallen short of expectations based on assay results. Some wonderful assays were taken, but results did not correspond in richness, the ore proving difficult to treat. Many methods were tried, and alterations made in the treatment plant, but none so far have proved satisfactory. A large amount of capital was expended, and the company had to reconstruct to procure further funds for development purposes. The company during the past year acquired the Stanley Special Claim, an adjoining property, into which some of their reefs are known to extend. Development-works in the mine are now being carried on, which it is hoped will enable the company to resume crushing operations again with better results. This battery at present is standing idle. The company proposes extending its water-race further up the river, and have already completed a dam. I trust it may be my lot in the next report to class this mine as one of the permanent gold-producers of the field.

New Zealand Talisman Company.—This company has recently acquired some adjacent properties—viz., the Victor Waihou and Crown Extended Special Claims—from the London and New Zealand Exploration Company. Considerable sums of money have been expended on these properties by previous owners, but with no results so far, although it is supposed that the Talisman and Crown reefs are dipping into these claims; but it is difficult to predict how far a reef extends, or what is 20 ft. ahead in solid rock anywhere. The extension of these reefs is therefore only a probability. It will, however, be a matter for congratulation if this company are fortunate enough to unearth them. The original Talisman ground has so far proved a consistent gold-producer, and this year's returns are an increase on those of last. From January to April of this year the total yield is £8,370. This company are about enlarging their reduction-works, and the work of excavating is about being commenced. This mine may, I think, be looked upon as one of those which will continue to add its quota to the annual gold-production of this field.

The Imperial is still struggling on, carrying on a little work, and it is rumoured good prospects have been obtained; but until some capital comes to its assistance, so as to enable more energetic development-works to be undertaken, there is very little hope of this becoming a gold-mine.

On the Shotover Special Quartz Claim a considerable amount of driving-work has been done. Coarse gold was discovered in a puggy formation, which assayed well, but so far no definite lode or reef has been met with.

At Rotokohu the Saxon No. 1 and No. 2 have been abandoned by the syndicate who took them up, because, when the low levels were driven in, the reefs—or, more probably, the outcrops found on the surface—did not exist there. The fact of the railway-tunnel, which is three-quarters of a mile in length, requiring to be driven through the hill opposite the Crown Mines battery has led to some of the old abandoned claims there being taken up in the hope that the tunnel may lead to some gold-bearing reefs being unearthed within the area of these claims.

The Komata Reefs Gold-mining Company was one of those which was led into erecting a battery before it was required, the mine not having been sufficiently developed at the time to keep it supplied with ore; consequently after crushing for a year the battery had to shut down. During the time it was crushing very good returns were made, the ore averaging something over £3 per ton. The closing of the battery was somewhat detrimental to the mine. It became necessary to put in a 3,000 ft. low-level tunnel, which has been driven some 2,400 ft., and it is anticipated that this work will have attained its object by July. A 3 ft. reef has been cut through, which assays remarkably well, and it is evident this drive is in good gold-bearing country, and there is every prospect of this company cutting other reefs in this low level before getting under the upper workings, from which such good-grade ore was taken and crushed. Water prevented the continuation of the No. 3 level, but this difficulty has now much decreased, presumably consequent upon the low level draining the same. I have very little doubt before many months this mine will be working its battery and furnishing returns equally as valuable as those it produced when it first started.

Hikutaia Gold Syndicate.—This plucky syndicate have carried out very extensive development-works in opening up ground containing very poor ores. For the past year they have been trying to ascertain the value of the great amount of work they have done on the property by making tests of the ore from various parts of it with a small test plant they erected there. The results appear to have satisfied the syndicate that the ore can be treated at a small profit, and the directors are said to be at present considering the advisability of erecting a permanent crushing plant. A long level crosscut is being put in, with a view of intersecting certain rich ore-lodes met with in the Maratoto Gold-mining Company's property.

The Waitekauri Extended Gold-mining Company have been greatly hampered, chiefly owing to

want of water-power to drive their battery. The long dry season has been much felt by mining companies; it has, however, shown them that if they intend to crush continuously they must be prepared to supplement their water-power with steam, as the former cannot be depended upon for the purpose. It affords me much pleasure to report that this company are said to have come across much richer ore than they have hitherto been working. I trust this may prove to be the case, as this company deserves some return for the many thousand pounds it has expended on the property.

The Maratoto Gold-mining Company have now finished the erection of their battery, and should shortly be crushing. A considerable amount of development-work has been carried on on this property. A considerable parcel of ore was shipped to England for treatment, which was expected to yield £20 per ton. If this expectation is realised the shareholders will be owners of a good mine, which should very materially add to our gold output during the next twelve months.

Waitekauri Cross Gold-mining Company.—Nothing of importance can be recorded about this mine; the company have so far met with no success. The mine at present is under protection. It is difficult to predict the future of this mine, as no works of any importance have been undertaken.

A small syndicate are prospecting the Advance Special Quartz Claim at Maratoto, formerly held under license as the Retreat Special Claim. Reports are in circulation as to the extremely encouraging prospects that are being obtained.

Waitekauri Gold-mining Company.—Very extensive mining operations have been carried on by this company during the past twelve months upon its various properties, and a considerable addition has been made to the area held by it, consisting of ground formerly taken up by others during the boom, but since abandoned, and the purchase of the claims formerly held by the Waitekauri Union Gold-mining Company. The total area of its holding amounts to 1,800 acres. The mine itself has been greatly developed, and a new reef 6 ft. in width, carrying rich gold, has been cut and driven on. The value of the ore is much increased, and this mine comes next to the Waihi as a gold-producer, the last month's return being worth £6,548, and the ore-value being £3 1s. per ton. It is, I understand, intended to increase the crushing-capacity of the mill, which is evidently necessary judging from the number of faces being worked and the amount of new blocks opened up. In the Te Ao-Marama section the work of driving the main crosscut is being rapidly pushed on. The prospects of this section are very good, as a good class of ore is being obtained, but until the crosscut through the hill is completed there is no means of conveying it to the battery. In the main section the low-level tunnel is making good headway, but until it is finished further sinking and driving cannot be undertaken, as there is at present no means of getting rid of the water. I shall not be surprised to see a much larger monthly gold return from this mine very shortly.

Grace Darling Gold-mining Company.— This company have gone to considerable expense on their mine, but so far with no satisfactory results. During the past year a new battery has been erected, but the ore treated was most disappointing, the returns being very small. Whether this was caused through wrong treatment, or the poor quality of the ore, remains yet to be definitely ascertained; in the meantime the company is being reconstructed.

Alpha Gold-mining Company.—Little work of importance has been done in this mine. The battery which was erected, after running a few weeks, was closed, the prospects not warranting further crushings of the ore at hand. A crosscut is now being put through the property, with a view to ascertain the number of reefs it contains, and to test the quality of the same.

The Jubilee Mine has been let on tribute for one year, which expires in August. The tributers are reported to have done fairly well, having opened up a good block of stone.

The Young New-Zealander and the Waitekauri King have been doing work of a prospecting nature with a reduced number of men.

The Ohinemuri Syndicate, after driving from their shaft for a considerable distance and intersecting a few small leaders only, failed to strike any portion of the reefs system from which such good gold was obtained in the surface-levels in times past. They have discontinued this, and resumed work again in the Elliott tunnel, so far, however, without success.

The Royal Standard Mine at Wharekiraupunga, since taken over by its new proprietor, has been under protection for the past twelve months.

The Waihi Mine, the largest in New Zealand, is still making rapid advance, and proving itself to be one of the great gold-producers of the world. Last year a large crosscut was started from the No. 2 shaft to the eastern boundary of the company's property. Although this crosscut has only been driven a few hundred feet, two large reefs carrying gold have been cut. How many more reefs may be met with before the drive reaches its proposed terminus it is difficult to say, as it appears this company cannot put in a drive in any direction without discovering a further supply of quartz. As the various lodes are sunk on they seem to increase in value, which, in addition to the new reefs discovered, should add very materially to the value of the output of the mine. The Waikino battery is being added to, and when the fifty head of stamps now being erected are in working-order the Victoria Reduction-works will be crushing with 150 head of stampers. Quite a thousand men are employed by this company.

The Union Waihi Gold-mining Company have during the past year acquired all the mining properties held by the Waihi-Silverton Gold-mining Company, together with its battery of forty stamp-heads, tramway, &c. The battery is now being thoroughly overhauled and repaired, preparatory to commencing crushing. The process to be adopted, I believe, is to be wet crushing. A large number of men are now engaged in development-work, so as to be in a position to keep the battery going continuously. It will afford me much pleasure to again see this mine figuring amongst the gold-producers of the Upper Thames portion of the peninsula.

Grand Junction Gold-mining Company.—A fair amount of work has been done on this mine during the year. New and powerful pumps have arrived from Home and have been placed in position, and are at present working satisfactorily. The shaft has been widened out for a considerable distance down, and this work is at present being actively pushed on. It is a pleasure to see this company pursuing a more vigorous policy, and at last taking proper steps to test their property, which, it is said, is fortunate enough to contain some of the Waihi Company's reefs.

The Waihi Extended and Ohinemuri Special Claims are being worked together. Boreholes have been put down in different parts, and by this means a reef formation has been discovered at a great depth. The directors have now given instructions for a shaft to be sunk to ascertain the value of this reef formation. The sinking of the shaft is to be proceeded with almost immediately.

The Waihi South Company have of late been doing some good work, having met with some slight encouragement in the crosscut towards the Consols property, where there are indications of coming on to a reef. Water is coming freely from the face, and the country indications are distinctly favourable. It is to be hoped that their efforts may lead to something substantial being discovered.

The Waihi Consols Gold-mining Company have done little work of importance, and are waiting until the crosscut in the South property reaches their boundary, when, as arranged, they propose working from it. In the meantime they have lent their pumping plant to the South Company, which saves the latter company some £300 or £400. In consideration for this they are to be allowed to use the South Company's shaft to drive from.

The Waihi Beach claims, which were the cause of considerable agitation during the boom, so far have been disappointing, as such great things were expected from these claims, but very little or no work has been done. The owners took up some eleven special claims over this ground; but, as so little work was being done upon this property, which is a freehold subject to mining, all but 400 acres was surrendered, and is now open for any one to take up. No one, however, seems inclined to mark it out. The claims still existing are under option, but unless greater vigour is displayed in working these mines there is very little prospect of ascertaining their quality.

Coromandel.

The mining in the Coromandel portion of the Hauraki Mining District is at present very dull. Owing to the closing-down of the Royal Oak of Hauraki Mine lately, quite seventy miners have been thrown out of work, and this being one of the mines owned by an English company has caused quite a depression, as many of the miners have had to go elsewhere for work.

Kauri Block.

The Hauraki Mine is still yielding a regular monthly payable return of gold. The Union Beach portion of this mine has also produced some good specimens during the past year.

The Golden Pah Company have had a few crushings of specimens since last report, and continuous development-work is still being actively carried on.

The Albion, the property of the Hauraki Main Lodes (Limited), is working with a reduced number of men, but no gold is being obtained.

The Bunker's Hill Company is still plodding along. Some specimen hauls have been obtained, the crushings from which gave most satisfactory results.

The Zealandia Claim is still in existence, but under protection at present.

The Welcome Find Licensed Holding has been let on tribute, and the tributers have had a few patches of specimens.

Freehold Land.—The Kathleen Mine has done a great quantity of work, but so far no payable gold has resulted from the labour expended, which is unfortunate after so much capital has been spent.

The Kathleen Crown Mine has been closed down.

The Blagrove resumed work some time ago, and is still developing.

The Kapanga Mine has had several crushings, the returns from which were satisfactory as to quantity crushed.

A lot of work has been done in Scotty's Mine, and it is still being worked. A few good crushings were obtained.

The Harbour View Special Claim is still let on tribute, and several small parcels of ore have been crushed, with fair results.

The Royal Oak of Hauraki Mine has produced a good deal of gold, but latterly the returns fell off, and the mine is now under protection. An immense amount of work has been done in this mine.

The Queen of the North Special Claim is still, I believe, let on tribute, but little gold has been obtained.

The New Four-in-hand Company is doing well. A good battery has been erected, and payable crushings are being obtained. Everything seems to be in favour of its becoming one of the best-paying mines in the district. It has already paid dividends.

The Waikoromiko, Four-in-hand, Holly Branch, Fabulous, and Federal have all been well worked, and some gold was obtained from the Forest Queen, and some small parcels from the others.

The Hauraki Associated Company have done a great deal of work, and have had some good crushings up to lately; now the gold seems to be running out.

Karaka Block.

The Success, New Hauraki, Poneke No. 2, Poneke No. 3, Standard, and Shetland are the only claims that work on this block, and very little gold is being obtained. So far the claims on this block have been disappointing; not one has come up to expectations.

Kennedy Bay.

The Bay View and Rose are the only claims at work apparently in this district, and I hear of no gold being obtained.

Pukemaukuku.

This block is still being prospected, but with no results so far.

Tiki.

The Progress-Castle Rock Company has now got a battery erected, and hopes are entertained that, as there are so many reefs about there, payable crushings will eventuate shortly.

Kuaotunu.

The Try Fluke Claim, belonging to the Mariposa Company, which has been the great gold-producer of this part of the Hauraki district for so many years, is at present under protection. When work is resumed I hope to see this claim again to the fore, with steady crushings.

The Kapai-Vermont Claim is at present being worked with a reduced number of men. This mine has for some time past been in law troubles, but an arrangement has recently been come to which is likely to enable the present company to work it continuously, and, it is to be hoped, with success, as a considerable quantity of gold was recovered from it in past years.

The owners of the Great Mercury Claim have obtained very little gold since they took it over last year.

The Irene, Juno, and Waitaia Claims are at work, mostly on tribute, and small crushings are being obtained from time to time.

Mercury Bay, Mahakirau, and Kapowai Block.

A number of new claims have been applied for in these parts, particularly on the Kapowai and Rangihau Blocks, most of which are now granted, as the Kauri Timber Company's surrenders and agreements have been arranged. Considerable delay was caused through these documents having to go before the directors of the company in Melbourne for confirmation. Good prospects have been found in several of these claims, notably in the Welcome Jack. Some very rich leaders near the surface, but so far no large gold-bearing reefs have been discovered. The leaders, however, are rich.

Opitonui.

Since my last report the Kauri Freehold Gold Estates' forty-stamp battery has been completed, and crushings are being regularly obtained each month. This company have expended a large amount of capital, and very large works are being carried on on its properties. The gold returns, however, vary, and are not as good as one would like to see. Some difficulty is experienced in treating the ore, which renders the returns smaller than they would otherwise be. So far the results do not reach expectations.

The School of Mines at Coromandel is now in thoroughly good working-order. A battery in connection with same is being erected. This battery has been long looked forward to by the miners, who will, upon its completion, have a ready means at hand for testing the results of their prospecting operations.

The monthly returns have fallen off, but this, of course, in country of this class must ever and anon occur as the rich patches are worked out, until others are unearthed. There is, however, a great deal of prospecting- and development-work being undertaken, which probably will result in some rich pockets and lodes being discovered.

TE AROHA.

There has again been little progress during the year, still in some respects there has been considerable improvement.

The Aroha Mines at Waiorongomai, under the management of the proprietor, Mr. Hardy, have proved a decided success. Though handicapped in being worked with only five out of ten head of stampers for some time through want of water, the results obtained exceeded every expectation, and go to show that, if only worked properly, there is plenty of remuneration for outlay of money in Te Aroha properties. Mr. Hardy has also during the year treated several parcels of ore forwarded to him by prospectors, and intends continuing to do so in the future.

The Rev. Joseph Campbell, of the Montezuma Mines, has not as yet met with great success in thermo-hyperphoric experiments, but latterly has turned his attention to dealings with local fluxes. He now claims to have made a most important discovery in the form of a method of melting refractory concentrates quite new to metallurgical science. By this process he considers the cost of treating refractory concentrates will be largely reduced, so that more may be heard of it during the coming year. Te Aroha district contains an immense quantity of somewhat low-grade ore, and a cheap process is exactly what is wanted. Arrangements have recently been made for carrying on Mr. Campbell's reduction-works as a public mill for the treatment of parcels of ore.

Prospecting is still going on in several claims—Alexandra, Empire, Golden Crown, and Golden Lead—a few being let on tribute.

There can be no doubt that this district is now in a fair way to prosperity, making the outlook for the coming year very hopeful. What is required is a cheap process of treatment for the vast bodies of low-grade ore which exist in great quantities throughout this portion of the field, and until that is discovered no large returns can be expected. To make this ore remunerative it will require to be treated at small cost, and in very large quantities. This, of course, means the discovery of a suitable process, and a large capital for reduction-works; to deal with small quantities will not, as a rule, prove profitable to investors. I have, &c.,

The Under-Secretary, Mines Department, Wellington. R. S. Bush, Warden.

Mr. Warden Roberts to the Under-Secretary for Mines, Wellington.

Sir,— Warden's Office, Tauranga, 17th April, 1900.

I have the honour, in compliance with instructions, to submit the following report in connection with this portion of the Hauraki Mining District:—

Te Puke Gold Reefs Gold-mining Company.—During the last twelve months the development-works in progress have been the extension of the low levels on the main 20 ft. reef. A new level further to the north was started, and on the reef being intersected a crosscut was driven south on the foot-wall of the reef. It was intended to drive the crosscut a distance of some 300 ft. to meet the winze sunk from the level above. The reef was cut through every 50 ft., and found to maintain its great size, and all the assays have proved payable. Work was stopped before the winze was reached, as it was understood that a strong London syndicate had been formed with ample capital to take over and fully develop the property. A fortnight before Christmas, unfortunately, the option was relinquished owing to the Boer war, and the mine is now closed till the money-market revives. The expert's reports and assays were all favourable and satisfactory.

Clark's Freehold.—Very little work has been done during the year, except the extension of the low level. The owner has spent a considerable amount of money on the property, and has four reefs, from 9 ft. to 3 ft., opened up sufficiently to show the value of the property, which now only awaits capital to develop it.

Falvey's Freehold.—This property adjoins Clark's Freehold. Two very large reefs outcrop on the east side of the Otara Hill, one of considerable size, that is supposed to be the continuation of the Te Puke Gold Reefs, which is two miles distant to the south. A low level has been put in about 150 ft., which is the lowest on the field.

The Sisters.—This property has been kept continuously prospected, with very encouraging results. Some very good loose stone has been obtained on the surface, and a drive put in to pick up the reef, but the country is very disturbed and broken. A low level has now been put in at a considerable depth so as to cut the reef in the solid country. In driving the low level a number of small leaders have been intersected, all showing quartz of a very favourable description.

General.

It is to be regretted that such a promising district as Te Puke should not have received a better trial. The reefs are all of large size, and could be cheaply, economically, and, presumably, profitably worked. I have, &c.,

J. M. Roberts, Warden.

The Under-Secretary, Mines Department, Wellington.

Mr. Warden Allen to the Under-Secretary for Mines, Wellington.

Sir,— Warden's Office, Blenheim, 30th April, 1900.

I have the honour to enclose you my annual returns for the Marlborough Mining District for the year ended the 31st March last.

I have very little to report as to the progress of the district for the past twelve months; nevertheless, I do not wish to imply that I have lost faith as to the value of this part of the colony as a mineral and mining district. To a certain extent progress has been undoubtedly retarded by the alienation of known auriferous country that should, and no doubt would, support a large number of miners.

North Bank of Wairau Sub-district.—This district is known to be auriferous. It consists for the most part of steep, rocky, broken mountains covered with bush, with here and there a small quantity of comparatively open level country. In this sub-district a few small patches of land have been withheld from alienation by the local Land Office, and styled "mining reserves." These reserves have for the most part been marked out and taken up for mining purposes, either as special claims or under prospecting licenses. Several miles of the creek-bed in Armchair and Top Valley have also been taken up as dredging claims, but to the 31st March last the principal work done has been attempts at syndicate flotation. One small battery of ten stamps, with the most primitive appliances, has been at work for a short time. I am indebted to one of the directors of the company for the following particulars. During the time they have been at work they have put through about 60 tons of stone, with a return of 26 oz. of gold. They employ twelve men. The battery is at present shut down to enable the company to put in two drives to try and cut the reef at a lower level. They look forward to the future with fair hopes of success, and, as they appear to have fairly and honourably carried on their work, success will be well deserved. There are several parties out prospecting in two of the valleys in this district. The next twelve months ought to show, from indications given by their surface-work, whether it will not pay better and be more satisfactory to try "deeper down."

Wakamarina Sub-district.—Worked principally by solitary miners, or by parties of two or three. In the Wakamarina River one dredge has been at work for some time, but I have not heard the results. There is a good opening for dredging operations in the Wakamarina and Pelorus districts, but a better and more powerful class of dredge is required than those now at work.

I have, &c.,
J. Allen, Warden.

The Under-Secretary, Mines Department, Wellington.

Mr. Warden Heaps to the Under-Secretary for Mines, Wellington.

Sir,— Warden's Office, Nelson, 29th May, 1900.

With reference to your circular (No. 23) of the 8th March last. I have the honour to forward herewith the annual statistics for that part of the Karamea Mining District under my jurisdiction, together with a general report of the condition of the mining industry therein for the year ended the 31st March, 1900.

Tadmor.

Five or six miles of this river has been pegged off as prospecting areas with a view to dredging, and I hear that a party of capitalists have been in the district trying to buy the flats along where the river was worked some years ago.

Wangapeka River.

It is reported that quite recently this river has been pegged off in prospecting areas to its junction with the Rolling River, but those concerned have been advised by an expert who has since visited the locality that, in his opinion, the river is too shallow and rocky for the purpose of dredging, and it is unlikely that anything further will be done in the matter for the present.

I have not heard whether the auriferous ground acquired by Mr. John Tinline is being worked, but Mr. Tinline is expected to be back in the colony shortly, when developments may be looked for.

Motueka.

The mineral license granted to the Asbestos Company, of Christchurch, mentioned in my last year's report, has been allowed to lapse, as two experts have, I understand, reported that there is not sufficient of the mineral in the locality to justify the great expense which would have to be incurred to develop the industry.

A number of prospecting licenses have been applied for on the Motueka River, with a view to testing its fitness for dredging, but they have not yet been consented to by the Hon. the Minister of Mines, pending learning the result of an application which has been made to have the river proclaimed a sludge-channel.

Another attempt is being made to bring in the water from Lake Peel for the purpose of sluicing auriferous ground on the Mount Arthur Table-land.

Takaka.

Forty applications have been dealt with during the year.

In the Takaka, Bubu, and Anatoki Rivers ten applications for dredging claims have been received; four have been granted, four withdrawn, and two adjourned for survey. No work has yet been done on those granted.

On the Anatoki six parties are engaged in sluicing. Jackson and party have just completed their water-race, and have started sluicing. The terrace they are working has been worked before, but from the prospects obtained the party is sanguine of being amply remunerated for their enterprise in bringing on the water. The bottom on this claim has never been worked, on account of its being lower than the river. To overcome this difficulty the party is erecting what is known as a "blow-up."

On the other side of the river Morrison and party are bringing up a tail-race to work their special claim. The other parties on the river are working singly, and making small wages.

On the Bubu I hear that Whelham has been doing well during the year, and has now sold out to a syndicate, which is expected to work this valuable freehold property on a larger scale. The difficulty has been a shortness of water during the summer months; but this last year he had granted to him the right to divert twenty heads of water from the right-hand branch of the Bubu River, which, when the race is completed, will give a constant supply.

Anderson and party are still bringing up their tail-race to work their claim. This has been a long job, as great difficulties have been met with on account of the rottenness of the ground.

From what I hear, I am of the opinion that if this district was thoroughly prospected payable ground would be found in many places, especially in the Anatoki, where the gold is of a coarse nature, well water-worn, and associated with quartz.

Collingwood.

This is the most interesting and important part of my district. It is one of the oldest mining districts in the colony, but for some reason never seems to have developed in proportion to the extent of its undoubted richness in mineral wealth. It is not alone rich in gold, but iron, coal, and limestone are found in close proximity to each other in great abundance and with great facilities for working and shipping. Two mineral licenses have been applied for during the year, with a view to developing the iron deposits on a large scale.

Caldwell and Son have completed their tramway, and are now sending good coal to market from their Pakawau Mine. Mr. Joseph Taylor, at Poponga, has struck good coal; and Mrs. Taylor has applied for a lease of an adjoining area upon which good indications have been discovered.

DREDGING.

During the year eleven licenses for dredging claims, of a total area of 620 acres 2 roods 34 perches, were granted. Nine of these are on the Aorere River, and the remaining two on the Parapara River. There are not any dredges at work yet, but I understand that dredges are in course of construction for some of the claims, and a further number of applications for dredging claims are now before the Court. But it is not only on dredging that great expectations are based; hydraulic sluicing is commanding attention, and I was struck by a comparison made by Mr. Howard Jackson, of Otago—which he has kindly permitted me to make use of—between the respective merits of dredging and sluicing on Druggan's Flat, Collingwood. He says, "Comparing the quantity of work done with that likely to be accomplished by a dredge sufficiently powerful to cope with wash of a similar character and 4 cubic feet buckets, it will be found that the advantage lies very largely with the sluicing proposition. The dredge would cost, say, £7,000, and £35 to £40 per week to run, and would require extensive repairs; with the necessary cessation of work probably as much time would be wasted in this way as short water-supply would cause to sluicing. Fifteen heads of water would treat 720 cubic yards per shift. The dredge would do well to treat 520 cubic yards. The weekly expenses of the sluicing claim would not exceed £17 to £20. A bucket-dredge cannot possibly clean up a hard and irregular bottom; thus it is certain to leave behind some portion of the gold, probably the best; whereas by clearing the bed-rock, as is done by sluicing, every crevice can be carefully examined and the gold saved." It struck me that this comparison by an able expert of the merits of the two methods would be useful to show that, while dredging is being cultivated to the neglect of other methods, here is a method which is more economical even than dredging, and can be utilised without delay, whereas there is no telling just now how long a dredge may have to be waited for. I have mentioned Druggan's Flat in this connection. This is a considerable area about four or five miles from Collingwood, which has recently been taken up for hydraulic sluicing.

Quartz and Alluvial.

Collingwood Goldfields (Limited).—This company has an area of about 250 acres, and employ from twenty to thirty hands. The development-works mentioned in my last year's report were brought to completion during the year at a cost of something like £15,000. Sluicing operations commenced on the 28th August last. Some delays were experienced during the first three months on account of slips on the race, but 250 oz. of gold was won up to Christmas last, and one washing-up since Christmas yielded 170 oz. The cost of shifting the washdirt was ¾d. per cubic yard. Fresh faces are to be opened up, so as to utilise fifty heads of water in all. The water-supply was excellent all through the drought, which lasted some months. The race and flume carries fifty-five heads, and the workings are proceeding in a most satisfactory manner.

Parapara Hydraulic Sluicing and Mining Company (Limited).—The estimated quantity of material treated at this mine during the year was 427,333 cubic yards, and the gold won was 1,319 oz. 18 dwt., and the number of miners employed twenty. The operations are now confined to the Hit or Miss and Glengyle portion of their property. Since commencing operations here in May, 1899, the saddle from the top of Glengyle through into Appos Gully, a distance of 10 chains, and of a depth varying from 90 ft. to 150 ft., has been worked through. This has enabled the manager, Mr. Peters, to take advantage of the water in Appos Creek, which is diverted on to the workings, and is a very welcome addition to his water-supply in such dry seasons as last summer. Leaving the Hit or Miss the material is conveyed some considerable distance in the direction of Glengyle. About midway the main run of boxes terminates, and the water is allowed to tear away all useless material from the top of the Glengyle workings. Reaching Glengyle, the water is again brought over another face of wash, and finally passes through a long 4 ft. sluice, all material being dumped into the Parapara River at the foot of the hill. The present level at Glengyle is being carried on to work the deep ground at the Hit or Miss, and commands a large portion of the company's property. As the ground above referred to lies between two hills, great care has to be exercised in the working of it to prevent slips, the ground being of a very rotten and loose nature. There is 1 chain of 4 ft. boxes and 7 chains of 3 ft., all rippled with angle-iron, flat, and railway-rail ripples and cocoa-matting. Further information about this mine and the works of the Collingwood Goldfields (Limited) are published at pp. 269–271 of the *New Zealand Mines Record* of February last.

Taitapu Gold Estates (Limited).—This company employs nine miners and prospectors, and four men temporarily on roads, and one man regularly at sledging, packing, &c. No quartz has been crushed during the last twelve months, but prospecting has resulted quite recently in striking the reef, which gives good prospects, and very sanguine expectations have been raised by the outlook on this property.

Golden Blocks, Limited (Taitapu).—The work at this mine has steadily proceeded during the past year, with very satisfactory results, and excellent returns for the future are anticipated. Crushing with the three-stamp battery has produced for the year ending 31st March last 2,168 oz. of gold from 650 tons of stone, which has realised net, after payment of all charges for realisation, £8,545. The company has just erected a five-stamp battery driven by steam. The stamps are 600 lb. each, and the old three-stamp battery has been connected. The whole eight stamps have been working steadily since the 26th March last. The plant is on a site under new and commodious buildings, and is connected with the mine by about half

a mile of new tramway. Mr. Frank Johnson, the manager, has shown much skill and energy in the transport of the heavy plant over very rough country, and in the completion of the whole work under most difficult conditions. There are about twenty men regularly employed on the works.

Johnston's United Gold-mining Company (Limited).—Operations at this mine during the past year have been practically suspended, owing to an option of purchase of the company's property having been granted for a great part of the time, the terms of which option prevented any work being done by the company. Three miners only have been employed.

At *Rocky River* I hear good work has been done, and good results have been obtained, but I have no exact information.

New Discovery.—Just recently a quartz reef, which has yielded good prospects, has been discovered on private land, and a small syndicate has been formed to further test it. If it is anything like what is represented it should turn out a valuable find. It is situated about a mile and a half from Collingwood Township on the Ferntown side of the Aorere River.

Altogether the outlook in the Golden Bay district is much brighter than it has been for many years. Considerable work is being done, much gold won, and new enterprises are being started.

The Customs returns show the quantity of gold sent coastwise from the Port of Nelson for export to be only 2,553 oz. 0 dwt. 12 gr., valued at £10,105; but I have evidence that nearly double that quantity left the port—viz., 4,769 oz. 7 dwt. 12 gr., valued at £18,965.

Chrome is being mined for at the Croixelles, and I hear that a considerable quantity has been shipped away.

I have, &c.,
WILSON HEAPS, Warden.

The Under-Secretary, Mines Department, Wellington.

Mr. Warden HAWKINS to the UNDER-SECRETARY for MINES, Wellington.

SIR,— Warden's Office, Greymouth, 11th June, 1900.

I have the honour to forward herewith statistical returns for the year ended the 31st March last, with detailed reports from the several districts of my Courts of Greymouth, Ahaura, Reefton, Lyell, and Westport. I am indebted for these detailed reports to the assiduity of the Wardens' Clerks of the several Courts, and I am also indebted to the managers and directors of companies and to mining agents for furnishing the materials for their compilation, and I have to express my thanks to all for the services rendered.

With the exception of Reefton, where reef mining has been, and will probably for many years yet to come be, the main source of gold-production, there is no question that the future of gold-production through the greater part of the district of my Courts depends on the success of dredging.

There is still room for a considerable development of sluicing—and, indeed, the whole of the country from Westport to Charleston lends itself best to that mode of working; while one of my correspondents, a mining agent of great and long experience, and of the highest repute, estimates that east of Ahaura Township there is an area of no less than twenty square miles of terrace land, practically untouched, which he believes to be highly auriferous and payable if only water could be brought in in sufficient quantities and with sufficient pressure to work it.

But to return to the dredging industry: The following figures give the best indication of the activity of prospecting and promoters of companies. The first table shows the number of prospecting licenses granted during the year ending the 31st March, 1900, with the acreage of areas; and the second shows the number of prospecting licenses granted from the 31st March, 1900, to the 31st May, 1900:—

RETURN of PROSPECTING LICENSES GRANTED to 31st March, 1900.

	Number granted.	Area granted. Acres.
Reefton	24	1,623
Westport	45	2,796
Greymouth	118	8,332
Ahaura	196	13,214
Lyell	11	675
Charleston	4	303
Total	398	26,943

RETURN of PROSPECTING LICENSES GRANTED from 1st April, 1900, to 31st May, 1900.

	Number granted.	Area granted. Acres.
Reefton	54	3,688
Westport	64	3,711
Greymouth	124	10,861
Ahaura	248	20,121
Lyell	26	1,578
Charleston	5	440
Total	521	40,399

It will be seen that the total grants from the 1st April, 1899, up to the 31st May, 1900, amount to 919 in number, and cover an area of 67,342 acres, and that far the larger number and portion of these totals were granted in April and May, nor at present is there any sign of exhaustion of applicants. This extraordinary and quite unprecedented expansion of enterprise has necessarily borne very heavily on the clerical staff of the Wardens' Courts, and I think it right to bring under the notice of the Minister the admirable and efficient manner in which they have met the strain.

A certain number of these prospecting areas have been and are being converted into special claims, an almost necessary process where companies are formed. It is difficult to say how many companies are actually floated. The Greymouth newspapers publish a list of forty-four as quoted on 'change, but there are no means of obtaining any official record of flotations, the registration being made in the different towns of the colony where the companies are formed. It is worthy of the consideration of the Minister whether it should not be made compulsory on the directors and secretary of every mining company to send, immediately on registration, to the Warden of the district where the claim is situate a note of the registration and two copies of the prospectus for deposit in the Warden's Court, and that the directors should send to the Warden, within fourteen days of the beginning of the actual working of a claim, a report in writing of the day on which they begin operations. An official record-book should then be kept of these particulars in the Warden's Court.

Though I have received much valuable information as to the prospects of some of the claims, I do not think it within my province, nor is it desirable, that I should deal with individual prospects. What I think I can say is that there are good grounds for reasonable belief that there are a sufficient number of claims of such a character as to justify the confidence that the industry will be established in my district on a solid payable basis. More than that it is impossible with prudence to say at this time. When the dredges now approaching completion get to work we shall all be wiser, and the necessity for prophesy and for speculative opinion will be gone. Meantime this rage for taking up prospecting areas is hardly justified by the state of the market. The West Coast shares, with a few notable exceptions, are quite unmarketable on the Dunedin Exchange, and the brokers have protested against the inundation of companies and their share paper. It is to be earnestly hoped that prospectors and promoters will for the present be compelled to some measure of patience and prudence, at least until proof is given by the dredges approaching completion of the soundness of the enterprise.

The great development of dredging in Otago took place, it must be remembered, out of actual profits. The large output of gold from the dredges on the Molyneux and elsewhere furnished the capital for new ventures. There was a solid, sound basis. Here the capital was found only to quite a small extent in the district, and as long as the Hartley and Riley phenomenal returns kept up, and the Dunedin Exchange was excited, it was easy to get West Coast shares subscribed in Dunedin. But ever since the black Saturday, the 31st March last, when Hartley and Riley returns made their sudden drop, it has, I am assured, been more and more difficult to do any business in any but the choicest of West Coast shares. There must be a limit to capital available for investment, and though Christchurch and Wellington, and to some extent Auckland, have contributed, and in some cases money has come from overseas, it is certain that the business will not be in a healthy state till substantial returns of gold come from the dredges themselves. Whatever happens really good payable claims will result in marketable shares, but the public should be strongly urged to caution in the disposal of their money.

If a substantial success is proved more capital will be needed. It may be that it may be imported from Australia. With this view it is to be hoped that some means may be found to bring about a direct weekly mail-service between Melbourne and the Bluff. Melbourne holds the Stock Exchange, and is the monetary centre of Australasia, and if we wish to attract Australian capital we must give every inducement and every facility to the capitalists to visit New Zealand. This point has been grievously neglected in the past. There is no reliable weekly service with Melbourne, and the long, tedious, and stormy passage by Hobart offers anything but an inducement to Melbourne men to visit us. While we have been coquetting with Canada and Adelaide we have neglected our nearest and wealthiest neighbour. The time is come to draw more closely our union with the coming commonwealth, and to exploit all the resources of mutual trade. The first step to this is a fixed reliable mail-service between Melbourne and the Bluff direct.

The next, as far as the West Coast is concerned, is a resolute and steadfast effort to improve our harbours; the cessation of all petty and unworthy jealousies between Westport and Greymouth, which are damaging alike to both ports; and the establishment of a steam-service between the Coast and Wellington, with specially constructed ships, having twin screws and being of sufficient speed and power to save the tides between Nelson, Westport, and Greymouth, and in which the interests of the travelling public are no longer treated with cynical indifference.

The West Coast, if the dredging proves a success, and with its large and valuable coalfields, has a great future before it. It will contribute largely to the wealth and resources of the colony; but its leading men must learn that union, self-help, and independence are the first conditions of success.

District of Greymouth Court.

Barrytown.

The Barrytown Flat No. 1 Gold-mining Company (Limited).—Since my last report this company's property has been taken over by Mr. Andrew McKay, who is still on the lead formerly worked by the company, and which continues to produce payable results. The claim is worked in three shifts, and has the advantage of the electric light. Mr. McKay has increased the spread of tables from 300ft. to 800 ft. It is intended to bring in more water through another water-race from Fagan's Creek and its tributaries, to enable the claim to be worked with two elevators, instead of

one as at present. The cost of the proposed race is estimated at £2,500. A sawmill is being erected to cut timber for the construction of the three miles of fluming required, owing to the broken and soft nature of the country over which the race passes. The claim is being worked to a depth of 15 ft, and the output with the one elevator is estimated at 30 yards per hour. The operations of Mr. McKay in connection with this claim give employment to eighteen hands.

Waiwhero Sluicing Company (No Liability).—This company's properties and operations were described in previous reports, and it is now merged into the Waiwhero Sluicing and Dredging Company (Limited). The original company, having met with greater difficulties than at first anticipated, due to the nature of the country and to protracted costly litigation, found it necessary to provide increased capital, and therefore reconstructed under the present title. On its formation the new company at once let contracts for the continuation of Canoe Creek Water-race construction to the extent of £7,000, and is also carrying out various incidental works involving considerable further cost. The present mine-workings are dependent on the water-supply from small creeks which have proved too fluctuating and scanty for continuous sluicing, although they have confirmed the company's belief in the remunerative character of the ground, and also its intention to bring in the copious and constant water-supply from Canoe Creek with the utmost possible speed. This company's operations have found employment for a large number of men, and are likely to do so for many years.

Pactolus Sluicing Company.—This company has during the last year completed its water-race from the Twelve-mile Creek, and this, together with its Fourteen-mile Creek Race, provides an efficient water-supply for sluicing purposes. The Twelve-mile Race is 400 ft. above sea-level, its length about two miles, and its construction is either tunnel or boxing. The timber for boxing both races has been rafted from Greymouth, hoisted up aerial lines, and run forward, as work proceeded, on tram-lines formed on the fluming. The race-construction necessarily occupied time, thus sluicing was not begun until a recent date, when No. 1 face was opened up, and is now being worked. The gold is fine, but is successfully treated and saved by the appliances in use.

Borough of Greymouth.

The lagoons within the borough have been taken up by a Sydney syndicate, who have undertaken to dredge them to the depth required for a wet dock, and to reclaim the swamps with the dredged material, for the right to the gold obtained in so doing. They expect to have a dredge at work in six months.

Macri Creek, Dunganville.

Here, as elsewhere in the Grey portion of my district, nothing else is thought of in mining but dredging. The whole of the New River from above Maori Creek to the sea at Paroa has been pegged off, and several claims have been readily floated.

Dredging.

The whole of the beach from Barrytown in the north to Teremakau in the south of this portion of my district has been pegged out, and prospecting licenses applied for and granted. Besides the beaches, every available river and stream and many claims on the flat have been pegged out for dredging purposes.

The Grey River Dredging Company, whose claim is situate on the Grey River, expect to have their dredge at work in about a month's time, and it is confidently believed that, after allowing for the necessary delays incidental to the working of a new industry, the results will be sufficiently satisfactory to give an impetus to dredging generally.

General.

The ordinary miners in the district are doing fairly well, especially those who have their own water-races and dams. There are large areas of poor ground which are too high for dredging, and which will eventually be sluiced when high-level water-races are brought in to command them.

Although the County Council has made several tracks during the year, still more are wanted to keep pace with the pushing forward of the dredging areas, and a track up the Ten-mile Creek would be a boon to the holders of quartz-claims on the western slope of the Paparoas.

The outlook for the coming year is very favourable, and points to increased activity in the mining industry.

Petroleum.

Mineral leases have been taken up at Kotuku, on the Greymouth–Jackson's Railway-line, where crude petroleum has been discovered, and several holders of the areas have been offered substantial terms for their interest therein.

Coal-mining and Timber.

The returns of exports of coal and timber from the Grey show a large increase. It must be always borne in mind that exports invariably imply corresponding imports, and these figures alone point to a very considerable expansion of trade. The following are the outputs for years 1898 and 1899:—

Coal.—Brunner Coal-mine—1898, 66,694 tons; 1899, 103,085 tons. Blackball Coal-mine—1898, 52,835 tons; 1899, 65,300 tons.

Timber.—Quantity exported in 1898, 11,783,292 superficial feet; 1899, 15,116,175 superficial feet. Amount of royalty received on timber cut to the 31st March, 1900, £206 18s. 5d.

Both these, moreover, are raw materials, the products of the district, and not the result of nursing by protective duties. In this respect the condition of the West Coast is unique. While

their products—gold, coal, and timber—are those of entirely unprotected industries, their whole working population is taxed to support industries in other provinces from which they not only derive no benefit, but by which they are heavily handicapped in the price of all articles of use and consumption and in the inferior quality, in many instances, of the goods they buy.

The following is the return of cases disposed of in the Magistrate's and Warden's Court at Greymouth for the year ending the 31st March, 1900: Civil, 194; criminal, 142; Warden's, 25.

The revenue for the year amounted to £4,140 8s. 6d., made up as follows: Warden's department, £3,782 18s. 3d.; Magistrate's, £294 15s. 3d.; licensing-fees, £62 15s.: total, £4,140 8s. 6d.

The particulars of revenue collected in the Warden's Court at Greymouth for the year ending the 31st March, 1900, are as follows: Miners' rights, £291 10s.; water-races, £8 17s. 6d.; registrations, £5 11s.; rents, £2,002 9s. 5d.; fees and fines, £39 5s.; miscellaneous, £1,435 5s. 4d.: total, £3,782 18s. 3d.

LIST of PROSPECTING LICENSES for DREDGING PURPOSES GRANTED in the WARDEN'S COURT, GREYMOUTH, from 1st April, 1899, to 31st March, 1900.

Date of Grant.	To whom License granted	Area granted.	Locality.
1899.		Acres.	
April 27	Joseph Taylor and another	56	Grey River.
May 10	Joseph Taylor	40	North Beach.
July 1	Thomas Rose	18	Grey River.
" 1	Olaf Magnus	90	"
" 11	Daniel Sheedy	15	New River.
" 11	William McKechnie	32	"
Aug. 22	John Gieseking	24	"
" 22	George Gage	96	Grey River.
" 22	F. Wallace McKenzie	50	Paroa (South Beach).
Sept. 11	Thomas Jones	80	Grey River.
" 11	J. D. Gillies	24	New River.
" 11	G. D. Wilson	24	"
" 11	Joseph Taylor	40	"
" 11	John Meiklejohn	50	North Beach (Twelve-mile).
" 11	N. D. Hood	40	Arnold River (Kaimata).
" 11	J. T. R. Delaney	100	Grey River.
" 11	J. D. Gillies	40	New River.
" 11	P. F. Daniel	3	South Beach, near New River.
" 11	George Gage	63	New River.
" 11	John McKenzie	50	Grey River.
" 26	Pero P. White	32	Ten-mile Creek.
" 26	J. McCarthy	24	"
" 26	John Nyberg	40	Arnold River.
" 26	T. G. Davis	100	Near Canoe Creek.
Oct. 9	P. Gillin	100	Grey River.
" 9	Joseph Taylor	40	North Beach.
" 9	John Byrne	20	Saltwater Creek, near Paroa.
" 9	William Wardell	100	Grey River.
" 9	William H. Brady	64	Stillwater Creek.
" 9	C. R. Skelly	64	"
" 9	Robert Gregory	90	Grey River.
" 9	J. C. Gittos	20	Saltwater Creek, near Paroa.
" 9	Thomas Oxenham	20	" "
" 25	Daniel Sheedy	24	Near Borough of Greymouth.
" 25	H. W. Kitchingham	50	Grey River.
" 25	B. McGuire and another	84	Stillwater Creek.
" 25	James Ring	76	"
" 25	James Keeney	90	North Beach.
" 25	P. Gillin	40	Grey River.
" 25	Adam Wilson	100	New River.
" 25	M. C. Roche	25	Teremakau River.
" 25	George Gilbert	80	Infant's Creek, near Marsden.
" 25	Thomas McCarthy	100	Paroa.
" 25	Thomas Oxenham	40	South Beach, near Paroa.
" 25	Benjamin Hurst	20	Darkies' Terrace, Point Elizabeth.
" 25	R. W. Parkinson	85	Grey River.
" 25	J. W. Parkinson	85	"
" 25	N. D. Hood	60	Arnold River.
" 25	Robert Russell	32	Stillwater Creek.
" 25	Henry Jones	32	"
" 25	T. Saunders	100	Kaimata.
" 25	Thomas Derby	100	New River.
" 25	William Wilson	100	Near New River.
" 25	James Isdell	65	Italian Creek, near Dunganville.
" 25	George H. Russell	100	Irishman's Creek, near Marsden.
" 25	Joseph Taylor	56	New River.
" 25	T. R. Delaney	60	Grey River.
" 25	Martin Parkes	30	North Beach.
" 25	John Byrne	100	Near Paroa.
" 25	J. W. Callwell	100	"
" 25	John Ryan	100	North of Barrytown.
" 25	C. L. Morice	100	Candlelight Creek.
" 25	R. Nancarrow	100	"
" 25	Daniel Liddy	..	Near Twelve-mile Creek.
" 25	H. Seebeck and another	100	Near Infant's Creek.
" 25	H. Jones	30	Stillwater Creek.
" 25	G. Gilbert	60	Near Cameron's.

List of Prospecting Licenses for Dredging Purposes, &c.—*continued.*

Date of Grant.	To whom License granted.	Area granted.	Locality.
1899.		Acres.	
Nov. 6	E. A. Wickes	100	New River.
„ 6	E. A. Wickes	100	„
„ 6	John Baybutt	28	Near Red Jack's.
„ 6	Thomas Baybutt	100	„
„ 6	Joseph Condy	100	„
„ 6	Thomas Waugh	100	Cock-eye Creek, near Marsden.
„ 6	Joseph Scott	100	Near Red Jack's.
„ 6	J. T. Skoglund	100	Candlelight Creek.
„ 6	Daniel Sheedy	100	„
„ 6	Thomas Waugh	100	Cock-eye Creek, near Marsden.
„ 6	C. L. Morice	100	Card's Creek, Marsden.
„ 6	H. Bignell	100	New River.
„ 6	T. W. Ponsonby	100	„
„ 6	J. W. Callwell	80	„
„ 6	G. S. Cray	80	„
„ 6	R. Nancarrow	100	Card's Creek.
„ 6	Alfred Stinton	100	Canoe Creek, Barrytown.
„ 6	H. W. Young	100	Near Barrytown.
„ 6	H. W. Young	100	„
„ 6	G. B. Ritchie	100	Deadman's Creek, near Barrytown.
„ 6	Thomas Joyce	100	Candlelight Creek.
„ 6	E. I. Lord	100	„
„ 6	J. D. Gillies	60	New River.
„ 6	James Thorburn	100	Near Barrytown.
„ 6	R. Nancarrow	100	Portuguese Creek.
„ 6	E. I. Lord	100	„
„ 6	James Trent	100	Near Barrytown.
„ 6	A. W. Morse	100	Barrytown.
„ 6	J. Ilton and another	30	New River.
„ 6	J. Taylor	32	Stillwater Creek.
„ 6	J. Keeney	100	North Beach.
„ 20	P. Warren	50	Barrytown.
„ 20	J. Trent	100	Near Barrytown.
„ 20	R. Clough	100	Barrytown.
„ 20	D. Ryan, jun.	99	„
„ 20	G. Winslow	100	Canoe Creek, near Barrytown.
„ 20	W. E. Reynolds	100	„
„ 20	H. W. Young	50	Near Canoe Creek, Barrytown.
Dec. 4	H. J. Jeffrey	100	„ „ „
„ 4	John Byrne	20	Saltwater Creek, near Paroa.
„ 4	Pero White	40	Twelve-mile, North Beach.
„ 4	R. W. Poschich	100	Canoe Creek, near Barrytown.
„ 18	M. Ryan	100	Seven-mile, North Beach.
1900.			
Jan. 8	James Keeney	15	Cobden Road.
„ 22	Andrew McKay	50	Near Fagan's Creek, Barrytown.
„ 22	J. Isdell	65	Near Grey River.
Feb. 5	J. T. R. Delaney	40	Twelve-mile, Grey River.
„ 5	T. McCarthy	100	Paroa.
„ 5	Joseph Taylor	100	Kotuku.
„ 5	John Gill	100	„
„ 19	John Byrne	20	Near Paroa.
Mar. 19	G. D. Wilson	100	Maori Creek.

District of Ahaura Court.

Orwell Creek.

The population in this district is still stationary, but will no doubt increase when dredges get to work. Some ground-sluicing is carried on when water is available; the want of it and irregularity of supply are the great drawbacks in this locality, inasmuch as there are no creeks for sixteen miles above Ahaura on the left bank, and none on the right bank which carry constant water.

There are two gold-dredging companies registered (Orwell Creek and Erickson's Reward) which purpose working two miles of Orwell Creek from Napoleon Hill downwards, the dredges for which are now building.

Moonlight.

There has been nothing new in the way of mining opened here during the past year. The population continues about the same—sixty-five—mostly employed in sluicing about the old worked ground. There are three companies registered for dredging in this creek, and every probability of several more. The contracts for building dredges for two of the companies have been let, and altogether the outlook for the place is promising. Coal is plentiful and easily got, and this will tend to the cheap working of dredges.

Half-ounce and Duffer's Creek.

There has been no change in this locality during the past year. The population remains about stationary, and finds employment both in sluicing and tunnelling. No new ground has been opened. Several areas in these creeks have been taken up under prospecting licenses, and two companies registered for gold-mining by steam-dredging.

Brandy Jack's and Totara Flat.

There are two companies registered for dredging in this locality. No new ground has been opened during the past year.

Waipuna and Noble's.

There are seven gold-dredging companies registered in respect of claims in this locality. Contracts for the building of pontoons have been let in three instances. There is a large area of country here available for dredging, the Grey and Waipuna Rivers and low terraces intervening offering a large field for operations. Prospecting is carried on on many claims for the purpose of proving value.

Nelson Creek.

The population here (165) is about the same as previous year. Sluicing is generally the method of mining. The permanency of water-supply is an immense benefit to this place. This enables ground of poor quality to be operated upon, and steady wages are generally earned. There are nine companies registered for dredging in this creek. The pontoons for two are in a forward state. Should these two prove successful there will be considerable increase in population, as the district over and above the companies floated shows a large area available for working by dredging.

Blackball and Healey's Gully.

The sluicing claims at Healey's Gully and Montgomery's Terrace still continue working with good results. There is a large area of terraces about these localities of a payable nature were water available. Jones and party are fetching in a water-race from Blackball. This will, no doubt, when completed, find work for several claims, but will be inadequate to work the large areas of terraces thereabouts. Facing the terraces running along the Grey River at the foot of Healey's Gully and Scotchman's Gully there are four dredging companies registered.

There has been no new discovery about Blackball during past year. The population has, however, increased considerably about the township, where it is mostly engaged in coal-mining. At Upper Blackball there is some sluicing going on that will probably last for some years, in consequence of the heavy nature of the wash making the working slow. There is one company registered for dredging in Ford's Creek.

No Town.

The population here has been on the decline for some time past. There are two companies registered for dredging. The district offers a fairly large field for that kind of mining.

General.

The inquiries made for dredging claims have given a great impetus to mining throughout these localities, and there has been found already employment for a considerable number of men, and the requisite labour has been difficult to secure. It can be safely said that should one-half the projected companies prove successful there will be some difficulty in finding the labour necessary for efficient working.

RETURN of MINING PRIVILEGES GRANTED by WARDEN at AHAURA for the Year ending 31st March, 1900.

Date of Grant.	Name of Licensee.	Nature of Privilege.	Area.	Locality.
		Dredging.		
1899.			Acres.	
April 1	James P. Doolan	Ordinary prospecting license ..	100	Grey River, Totara Flat.
" 1	George Hill	" ..	32	Mosquito Creek.
" 23	Bert Millington	" ..	16	Waipuna Creek.
May 22	George S. Cray	" ..	48	Blackball Creek.
" 22	Thomas W. Ponsonby ..	" ..	32	"
" 22	Henry Neilsen	" ..	24	Ford's Creek.
" 22	H. A. Wick	" ..	22	"
" 22	Henry Neilsen	" ..	24	"
" 22	Henry Dearing	Prospecting dredging claim ..	160	Waipuna.
" 22	Donald McGregor	" ..	160	"
" 22	Henry Dearing	" ..	160	"
" 22	R. Currie	" ..	150	"
" 22	William Rundle	" ..	100	"
" 22	Henry Bignell	" ..	100	No Town Creek.
" 22	Thomas W. Ponsonby ..	Ordinary prospecting license ..	32	"
June 26	John Turner	" ..	24	Moonlight Creek.
" 26	John Ross	" ..	24	Nelson Creek.
" 26	H. A. Wick	" ..	24	"
" 26	Henry Watterson	" ..	48	Ahaura River.
" 26	Joseph Taylor	" ..	40	Blackball Creek.
" 26	Frank Stace	" ..	100	Waipuna.
" 26	James Marshall	" ..	60	Totara Flat.
" 26	William Malone	Prospecting dredging claim ..	40	Red Jack's Creek.
" 26	Duncan Campbell	" ..	100	Above Moonlight Creek.
" 26	Olaf Magnus	Ordinary prospecting license ..	50	Moonlight Creek.
" 26	A. Dunn and A. Ross ..	Prospecting dredging claim ..	100	Grey River, Donald's Bluff.
" 26	William Rundle	" ..	100	Nelson Creek.
July 27	James Hargreaves	Ordinary prospecting license ..	50	Ahaura River.
" 27	D. Donald	" ..	100	Grey River, Totara Flat.

RETURN of MINING PRIVILEGES GRANTED by WARDEN at AHAURA—*continued.*

Date of Grant.	Licensee.	Nature of Privilege.	Area.	Locality.
		Dredging—continued.		
1899.			Acres.	
July 27	Thomas Magee	Prospecting dredging claim	40	Nelson Creek.
" 27	William Rundle	Ordinary prospecting license	30	"
" 27	Nelson Creek Gold-dredging Company (Limited)	Special claim	12	"
" 27	D. Ross	Ordinary prospecting license	30	"
Aug. 24	A. Wick	"	32	Grey River, Ruby Creek.
" 24	D. O'Connor	"	40	Hatter's Creek.
" 24	J. Flynn and another	Prospecting dredging claim	60	Blackwater Creek.
" 24	M. Malone	Ordinary prospecting license	20	Red Jack's.
" 24	J. Flynn and another	"	16	Blackwater Creek.
" 24	Nelson Creek Gold-dredging Company (Limited)	Special claim	10	Nelson Creek.
24	Thomas W. Ponsonby	Ordinary prospecting license	100	Grey River, Ahaura.
" 24	Hugh Calder	"	50	Ahaura River.
" 24	Joseph Shrives and others	"	80	Grey River, Blackball.
" 24	J. D. Gillies	"	40	Hatter's Creek.
" 24	J. D. Gillies	"	40	Barry's Creek.
" 24	John Craig	Prospecting dredging claim	50	Callaghan's Creek.
" 24	E. Kilkelly	"	50	"
" 24	John Gough	"	50	"
" 24	H. A. Wick	Ordinary prospecting license	32	Red Jack's Creek.
Sept. 28	A. Dunn	"	100	Grey River Junction.
" 28	A. Dunn	"	48	Ahaura River.
" 28	William Rundle	"	20	Nelson Creek.
" 28	William Rundle	"	60	Grey River, Waipuna.
" 28	E. Murphy	"	48	Ahaura River.
" 28	A. Dunn	"	90	Grey River, Mackley's.
" 28	L. Stewart	"	57	Grey River, above Allen River.
" 28	J. Calliannan	"	84	" above Clark River.
" 28	H. Jones	"	48	" above Allen River.
" 28	C. Parfitt	Prospecting dredging claim	100	No Town.
" 28	R. Currie	Ordinary prospecting license	100	Grey River, above Big River.
" 28	R. Currie	"	50	" Waipuna.
" 28	Charles L. Morice	"	100	" Totara Flat.
" 28	C. Parfitt	"	50	Deadman's Creek.
" 28	Joseph Taylor	"	100	Grey River, above Moonlight.
" 28	M. Malone	Prospecting dredging claim	64	Nelson Creek.
" 28	R. Rayner	Ordinary prospecting license	64	Grey River, Blackwater.
" 28	H. W. Young and another	Special claim	60	Orwell Creek.
" 28	Patrick Ruane	Ordinary prospecting license	25	Callaghan's.
" 28	Hugh Calder	"	100	Grey River, below Moonlight.
" 28	D. D. Baird	"	50	" Totara Flat.
" 28	M. Malone	"	20	Red Jack's.
" 28	E. Murphy	"	100	Grey River, below Moonlight.
" 28	Joseph Taylor	"	100	" below Slatey.
" 28	R. Currie	"	90	" Waipuna.
" 28	J. A. Egden	"	80	Brandy Jack's.
" 28	W. A. Sadler	"	32	Nelson Creek.
" 28	F. Turner	"	24	Moonlight Creek.
" 28	H. A. Wick	"	40	Red Jack's.
" 28	James Haisty	"	80	Little Grey River.
" 28	William Campbell	"	80	"
" 28	H. A. Wick	"	12	Grey River, Blackball.
" 28	C. Archer	"	100	Half-ounce.
" 28	J. Geiseking	"	100	"
" 28	James Irvine	"	80	Little Grey.
" 28	Alexander Doig	"	70	Grey River Junction.
" 28	Joseph Taylor	"	24	Big River.
" 28	Joseph Taylor	"	24	Blackwater.
" 28	Joseph Taylor	"	30	Snowy Creek.
" 28	David Kidd	"	80	Little Grey.
" 28	Patrick O'Brien	Prospecting dredging claim	32	Gow Creek.
" 28	Joseph Taylor	Ordinary prospecting license	100	Grey and Ahaura Rivers.
" 28	Joseph Taylor	"	32	Snowy Creek.
" 28	Thomas McDowell	"	32	Moonlight Creek.
" 28	James Marshall	"	37	Totara Flat.
" 28	James Haisty and another	"	32	Blackball.
" 28	James Haisty and another	"	34	"
Oct. 26	James Hargreaves	Special claim	100	Ahaura River.
" 26	Alexander Doig and another	Ordinary prospecting license	16	Blackwater Creek.
" 26	John C. Brown	"	10	Blackball Creek.
" 26	William Henry Parfitt	"	36	No Town Creek.
" 26	A. Dunn	"	50	Ahaura River.
" 26	H. A. Wick	"	82	Red Jack's.
" 26	M. Doolan	"	100	Grey River, Totara Flat.
" 26	Thomas H. Garth	"	50	Ahaura River.
" 26	T. E. Coates	"	100	Grey River, Scotchman's Creek.
" 26	James Isdell	"	80	Totara Flat.
" 26	D. Campbell and another	"	100	Moonlight Creek.
" 26	H. W. Young	"	60	Totara Flat.
" 26	T. W. Wilson	"	100	Little Grey River.
" 26	James Johnston	Prospecting dredging claim	100	"
" 26	H. A. Wick	Ordinary prospecting license	100	Grey River, Nelson Creek.
" 26	John Gill	"	100	Roaring Meg Creek.

RETURN of MINING PRIVILEGES GRANTED by WARDEN at AHAURA—*continued.*

Date of Grant.	Licensee.	Nature of Privilege.	Area.	Locality.
		Dredging—continued.		
1899.			Acres.	
Oct. 26	Hugh Magill	Ordinary prospecting license ..	100	Grey River, Moonlight.
" 26	Hugh Magill	" ..	100	" "
" 26	Patrick Regan	" ..	80	Grey River, near Clark River.
" 26	Frances Jolliffe	" ..	60	Ngahere.
" 26	A. J. Berry and another ..	" ..	24	Grey River, near Clark River.
" 26	John Turner	" ..	76	Moonlight.
" 26	A. J. Berry and another ..	" ..	34	Clark River.
" 26	Thomas E. Coates	" ..	100	Grey River, Nelson Creek.
" 26	H. A. Wick	" ..	70	Nelson Creek.
" 26	C. G. F. Morice	" ..	100	Grey River, Totara Flat.
" 26	Joseph Taylor	" ..	100	Ahaura River.
" 26	James Donnelly	" ..	20	Nelson Creek.
" 26	James O'Malley	" ..	64	Grey River, Mackley's.
" 26	J. T. Tidd	" ..	96	Grey and Alexander Rivers.
" 26	Joseph Ingles	" ..	100	Orwell Creek.
" 26	Joseph Ingles	" ..	100	"
" 26	A. J. McIlroy	" ..	100	Moonlight.
" 26	George Falconer	" ..	20	Ten-mile Creek.
" 26	Thomas Brown	" ..	100	Grey River, Ngahere.
" 26	John C. Brown	" ..	100	" "
Nov. 23	H. Magill	" ..	100	" Ahaura Junction.
" 23	H. Magill	" ..	100	Grey River, below Ahaura Junction.
" 23	H. Magill	" ..	99	Ditto.
" 23	John McKay	" ..	80	Teviot Creek.
" 23	Daniel O'Connor	" ..	100	Brandy Jack's Creek.
" 23	John Geiseking	" ..	100	Grey River, Totara Flat.
" 23	Patrick Gillin	" ..	100	" Twelve-mile.
" 23	William John Gregory ..	" ..	48	Blackball Creek.
" 23	Thomas W. Wilson	" ..	56	Waipuna.
" 23	Patrick Regan	" ..	100	Grey River, Totara Flat.
" 23	Alexander McDonald ..	" ..	100	" "
" 23	Joseph Taylor	" ..	48	Waipuna.
" 23	H. Whitfield	" ..	60	Ahaura Plains.
" 23	H. W. Young	" ..	80	"
" 23	George Hill	" ..	40	Waipuna.
" 23	H. A. Wick	" ..	24	Nelson Creek.
" 23	H. A. Wick	" ..	24	"
" 23	H. A. Wick	" ..	100	Kangaroo Creek.
" 23	Patrick Regan	" ..	100	Granville.
" 23	J. D. Gillies	" ..	60	Hatter's Creek.
" 23	Henry Edser	" ..	100	Big River and Slatey Creek.
" 23	William Creagan	" ..	100	Grey River, Twelve-mile.
" 23	Frank Turner	" ..	32	Moonlight.
" 23	Frank Turner	" ..	38	"
" 23	Sydney Fache	" ..	36	Kangaroo Creek.
" 23	Thomas Brown	" ..	100	Grey River, Ngahere.
" 23	John C. Brown	" ..	37	" "
" 23	George Erickson	" ..	100	Orwell Creek.
" 23	Joseph Scott	" ..	100	German Gully.
" 23	Alexander Cowan	" ..	100	Rees's Flat.
" 23	Alexander Cowan	" ..	100	"
" 23	A. J. Berry and another ..	" ..	100	Grey River, near Alexander River
Dec. 21	John Smith	" ..	80	Ahaura River.
" 21	Albert Wick	" ..	40	Grey River, Ruby Creek.
" 21	Frederick Shury	" ..	100	" near Alexander River.
" 21	Peter Petersen	" ..	48	No Town Creek.
" 21	Henry Erickson	" ..	100	Ahaura Plains.
" 21	Caroline Erickson	" ..	100	"
" 21	James Haisty and others ..	" ..	100	Ford's Creek.
1900.				
Jan. 25	Joseph Ingles	" ..	100	McCoola Creek.
" 25	John Gill	" ..	100	Roaring Meg Creek.
" 25	M. Ryan	" ..	32	Callaghan's Creek.
" 25	D. Donald	" ..	96	Grey River, Totara Flat.
" 25	Ralph Rayner	" ..	36	" Blackwater.
Feb. 22	H. A. Wick	" ..	100	" Blackball.
" 22	Robert S. Perrett	" ..	20	Noble's.
" 22	George Hill	" ..	100	Mosquito Creek.
" 22	George Hill	" ..	100	"
" 22	Duffer's Creek Gold-mining Company (Limited)	" ..	63	Duffer's Creek.
" 22	Martin Moloney	" ..	70	Orwell Creek.
" 22	Thomas H. Mackley ..	" ..	20	Grey River, Waipuna.
" 22	George Hill	" ..	60	Waipuna.
" 22	M. Walmsley	" ..	20	Sullivan's Creek.
" 22	H. R. Young	" ..	100	Grey River, near Alexander River
Mar. 22	H. Haines and others ..	" ..	20	" above Brown's Creek.
" 22	Samuel Samuels	" ..	48	Ahaura River.
" 22	Samuel Samuels	" ..	48	"
" 22	R. W. Parkinson	" ..	92	Snowy Creek.
" 22	Hugh Magill	" ..	88	Grey River, Totara Flat.
" 22	M. Walmsley	" ..	69	Sullivan's Creek.
" 22	Hugh Magill	" ..	100	Grey River, below Ahaura.

RETURN of MINING PRIVILEGES GRANTED by WARDEN at AHAURA—*continued.*

Date of Grant.	Name of Licensee.	Nature of Privilege.	Area.	Locality.
		Dredging—continued.		
1900.			Acres.	
" 22	Richard Williams	Ordinary prospecting license ..	31	Brandy Jack's.
" 22	Matthias Willing	" ..	40	Waipuna.
" 22	Hugh Magill	" ..	100	Grey River, Totara Flat.
" 22	A. Doig and another ..	" ..	100	Blackwater Creek.
" 22	Richard Williams	" ..	100	Snowy Creek.
" 22	Hugh Magill	" ..	100	Grey River, below Ahaura.
			13,396	
		Sluicing.		
1899.				
April 1	Thow Shim	Extended claim	4	Ahaura River.
" 24	J. Karrigan and another ..	"	4	No Town.
" 24	W. H. Kells and another ..	"	2	Blackball.
" 24	James Boyett	"	2	Moonlight.
May 22	P. Pesseni and others ..	Special claim	9	Ahaura River.
" 22	M. O'Brien and another ..	"	6	Nelson Creek.
" 22	P. Considine and another ..	Extended claim	5	Ahaura River.
" 22	Sue Poy and others	"	3	"
" 22	J. Geiseking and others ..	Special claim	7	Healey's Gully.
" 22	M. Graham and others ..	"	20	Orwell Creek.
" 22	G. Anderson and others ..	"	15	Blackball.
" 22	J. Graham and another ..	"	10	Moonlight.
" 22	William Lillie and another ..	"	10	"
June 26	Joseph Butler and another ..	Extended claim	5	Blackball.
" 26	R. Devereux and others ..	Special claim	10	Moonlight.
" 26	Daniel Riley	"	8	Ahaura River.
July 27	Republic Sluicing Company (Limited)	"	20	Healey's Gully.
" 27	C. Corkery and others ..	"	9	Ahaura River.
" 27	C. Ashby and another ..	Extended claim	2	Moonlight.
" 27	D. Flannery and others ..	Special claim	10	German Gully.
Aug. 24	C. Jones and another ..	Extended claim	4	Ahaura River.
" 24	Shim Low and others ..	"	4	"
Sept. 28	E. Carton and others ..	"	5	Paparoa Ranges.
" 28	Samuel H. Thrower.. ..	"	5	Nelson Creek.
" 28	Thomas O'Brien and others ..	"	3	Ford's Creek.
" 28	A. Dunn	"	5	Ahaura River.
" 28	E. Kilkelly..	"	3	Callaghan's Creek.
" 28	Joseph Allen, jun.	"	2	Nelson Creek.
" 28	Chow Hing and another ..	Special claim	6	Ahaura River.
" 28	Lot Kear and others ..	"	10	Blackball.
" 28	John Straker	Extended claim	2	Nelson Creek.
Oct. 26	Daniel Riley	Special claim	9	Ahaura River.
" 26	Chow Fong and another ..	Extended claim	2	Ford's Creek.
Nov. 23	T. V. Byrne and others ..	Special claim	20	Bell Hill.
" 23	M. Devereux	"	10	Roaring Meg.
" 23	J. O'Loughlin and others ..	Extended claim	3	Ford's Creek.
" 23	D. Steele	Special claim	7	Totara Flat.
" 23	Lot Kear	Extended claim	2	Healey's Gully.
" 23	Lock Shee and others ..	"	5	Red Jack's.
" 23	A. Dunn	Special claim	10	Ahaura River.
" 23	G. Askenbeck	Extended claim	5	Carriboo Creek.
" 23	George Gamble and another ..	"	3	No Town.
" 23	H. Haines and others ..	"	5	Upper Grey.
Dec. 21	H. Bignell	Special claim	10	Blackball.
" 21	H. Okey and another ..	"	9	"
" 21	W. J. Gregory	Extended claim	4	"
" 21	H. Haines and another ..	"	2	Upper Grey.
" 21	M. Sogonini	"	2	Orwell Creek.
" 21	S. Jackson	"	5	Alexander River.
1900.				
Jan. 25	John Geiseking	"	2	Blackball.
" 25	Thomas Martin	"	5	Paparoa Ranges.
" 25	T. Doyle and another ..	"	2	Moonlight.
" 25	Ah Long	"	3	Ahaura River.
Feb. 22	A. Brooks and another ..	Special claim	10	"
" 22	P. McKenna	Extended claim	5	"
Mar. 22	D. Hyndman and others ..	Special claim	15	Healey's Gully.
" 22	Yong Foo and others ..	"	11	Red Jack's.
			376	

GENERAL SUMMARY.

Dredging.	Number.	Area. Acres.
Ordinary prospecting licenses ..	177	11,478
Prospecting dredging claims ..	19	1,736
Special claims	4	182
	198	13,396

Sluicing.	Number.	Area. Acres.
Extended claims	33	115
Special claims	24	261
	57	376

District of Reefton Court.

From the opening of the district to the 31st March last 796,283 tons of quartz has been crushed, from which 537,788 oz. of gold has been obtained, representing a value of £2,112,022, out of which £641,418 has been distributed in dividends. The total amount of alluvial gold raised for the same period is approximately estimated at 140,292 oz., representing a value of £521,714. The total production of the district is, as far as can be ascertained, 678,080 oz. of gold, of a value of £2,633,736.

I submit the following table showing the calls made, dividends declared, &c., by various companies in the district during the year :—

Gold Returns, &c.

Company.	Calls.	Dividends.	Quartz crushed.	Yield of Gold.	Value.
	£ s. d.	£	Tons.	Oz. dwt. gr.	£ s. d.
Progress Mines	..	41,250	45,132	19,552 0 0	80,996 15 6
Consolidated Goldfields of New Zealand: Wealth of Nations	..	..	1,700	763 18 4	3,089 11 8
Big River	..	4,800	1,685	2,093 0 12	8,494 19 3
Golden Lead	363 0 0	..	..	..	..
Hercules	700 0 0	..	..	..	..
Lord Edward	100 0 0	..	..	..	..
Snowy Creek	1,754 17 6	..	..	..	..
Kirwan's Reward	3,033 6 8	..	..	..	..
Keep-it-Dark	..	1,000	9,115	2,302 14 17	9,217 11 7
„ (cyanide process) ..	..	..	..*	1,681 12 6	5,451 10 7
No. 2 Keep-it-Dark	162 7 6	..	..	..	..
Maritani	33 17 1	..	..	..	..
Revival	450 0 0	..	40	29 0 0	115 0 0
Boatman's Creek	600 0 0	..	..	..	..
Cumberland	3,000 0 0	..	160	55 11 9	220 6 1
Dillon	500 0 0	..	25	6 0 18	23 14 0
Newhaven	50 0 0	..	..	..	..
Private company—The Last Chance ..	..	..	420	210 6 0	846 9 0
	..	..	..	26,693 3 18	108,455 17 8
Alluvial gold	..	..	..	2,772 0 0	10,820 0 0
Totals	10,747 8 9	47,050	58,277	29,465 3 18	119,275 17 8

* From 7,550 tons tailings.

The following account of the work done, &c., in the principal mines will enable you to form some idea of the state of the mining industry in this district.

Keep-it-Dark Company, Crushington.—The work during the year has consisted of stoping out quartz from No. 2 level, and opening up of No. 3. The battery was started crushing in June last, and has since been continuously running. The greater portion of the stone treated has been taken from No. 2 level. During the last two or three months stoping has been carried out in No. 3 level. Since the striking of the reef in No. 3 level (mentioned in last report) it has been driven on 238 ft. The lode on this level is much longer than it has been proved to be in the other levels, the thickness being about the same—viz., 8 ft.,—and the quality as good. A rise has been put up between Nos. 3 and 2 levels, the height being 174 ft. Three levels are now opened, and from all appearances sufficient stone should be forthcoming to keep the battery going for some years. The treatment of the company's tailings by cyanide has been very successful. All the tailings as they leave the battery are passed through the cyanide-vats, the cost of treatment being, I am informed, about 5s. per ton of 27 cubic feet. The company has acquired by purchase the two adjoining claims—viz., the Hercules, and No. 2 Keep-it-Dark. During the year the company has crushed 9,115 tons of quartz for a yield of 2,303 oz. 14 dwt. 17 gr. of gold, valued at £9,217 11s. 7d., and has treated 7,550 tons of tailings for a yield of 1,681 oz. 12 dwt. 6 gr. of gold, of the value of £5,451 10s. 7d. The total output of the mine has been 136,811 tons of quartz, from which has resulted 71,614 oz. of gold valued at £278,062 3s. 9d., out of which dividends to the extent of £114,416 13s. 4d. have been distributed.

Big River.—During the year the mine has produced 2,093 oz. 0 dwt, 12 gr. of melted gold, valued at £8,494 19s. 3d., from 1,685 tons of stone, or an average value of 1 oz. 4 dwt. 21 gr. per ton of ore crushed. Dividends amounting to £4,800, equal to 4s. per share, were paid. The whole of the above stone was produced from a reef between the No. 2 intermediate level and No. 5 level, and for about 60 ft. above the latter. Recently operations were directed to endeavour to trace this reef down to No. 6 level, but results were disappointing under No. 2 intermediate level, no defined reef showing underfoot. It was then decided to drive No. 6 level, and here a gold-bearing reef was struck under the perpendicular of the upper workings. The stone was of fair size, and carried highly payable gold. Along this level the reef was 18 ft. in length. The usual connections with the workings overhead have been made, and stoping on the reef has been commenced. The extension of No. 6 level north is in progress. In No. 2 level a large amount of prospecting-driving has been done, but so far without payable results. In No. 1 level a new reef was discovered, which is now being developed by a winze. The stone is from 2 ft. to 3 ft. wide, and carries payable gold. A contract for 140 ft. of driving is now in progress from No. 1 intermediate level to intersect this reef about 160 ft. deeper than No. 1 level. The total output of the mine is 16,874 tons of stone, which yielded 23,940 oz. of gold, of a value of £96,471 6s. 2d., out of which £46,200 has been paid in dividends.

Sir Francis Drake, Merrijigs.—Owing to disagreements between the owners, work has not been carried on vigorously. A new company under the title of the New Scotia Gold-mining Company has recently been formed to work this property. The company consists of twenty-four thousand shares of 10s. each, of which six thousand shares have been allotted to the vendors as being fully paid up in payment of their interest. The new proprietary are now proceeding to erect a cyanide plant capable of treating all the tailings now stored on the dump and those produced by the battery. On the property there are various large ore-bodies of a low-grade quality, which it is expected can be made to pay under the latest scientific cyanide treatment.

Cumberland, Merrijigs.—Two small trial crushings took place during the year with the object of ascertaining the value of the stone found in the lower workings, but both proved disappointing, the greater portion of the stone treated being of low grade. Prospecting operations have been steadily proceeded with throughout the year, but beyond good formation and large quantities of very low-grade ore there has not been any feature calling for further mention. At present the work being carried on consists of the driving of a series of crosscuts from No. 2 level.

Snowy Creek Mine, Snowy Creek.—The sinking of the main shaft to a depth of 110 ft. has been completed since date of last report. Under agreement with the company, Messrs. Duffy, Rogers, and party have erected a five-head stamp-battery, with all necessary appliances; and in consideration therefor have received a tribute of the mine for eighteen months, commencing from the 1st September last. The tributers are to pay the company 10 per cent. of the gold obtained, and at the expiration of the tribute the company have the right to purchase the battery and plant at a valuation. An intermediate level has been driven from the winze both north and south on the reef, which is now proved about 70 ft. in length to date. It will average throughout about 2 ft. in width, and shows good gold. Over 100 tons of stone is on the surface, and crushing is about to be commenced.

Kirwan's Reward, Victoria Range.—On behalf of the company Mr. G. Perotti has nearly completed the erection of a ten-head battery and aerial tramway, which latter is 78 chains in length, and connects the mine with the battery. Crushing will commence shortly. In the mine, No. 1 tunnel has been extended a distance of 64 ft., making the total distance driven 630 ft. An uprise has been put through from the tunnel to the shaft, connecting with the surface, a distance of 140 ft. Two shafts have been put down from the surface to connect with this tunnel, the depths being 66 ft. and 195 ft. A considerable quantity of loose stone has been collected on the surface for the purpose of keeping the battery constantly crushing.

Golden Lead, Merrijigs.—The driving of the low-level tunnel was continued during the year, and is now in 1,700 ft., being 460 ft. past the perpendicular of the lode in the upper level. The whole of the ground passed through was very hard, not requiring any timbering. The driving of this tunnel has been discontinued for the present, and a shallower level is being proceeded with at the extreme north end of the lode. The company have been prospecting for the last five years without beneficial result.

Mr. E. W. Spencer, the general manager and engineer of the Progress Mines and Consolidated Goldfields, has supplied me with the following information concerning the claims under his charge:—

Progress Mines.—The following is a *résumé* of the work done during the year: In all 2,200 ft. of driving on the line of reef, 1,049 ft. of crosscutting, and 996 ft. of raising and sinking has been done, besides the main shaft which was sunk from No. 7 to No. 9 level, a vertical distance of 200 ft., making No. 9 level 1,116 ft. from surface. The development has been carried on in a general manner all over the mine, particularly on the eastern section, where we have done a considerable amount of driving and crosscutting both at No. 1 and No. 3 levels, with the object of intersecting our north and south block of stone which was first encountered at No. 4 level. On this level we have both raised and sunk, showing it to be of large dimensions. No. 7 is being extended east by rock-drills. Nos. 8 and 9 levels have both been driven extensively, and stoping is now proceeding in a general manner throughout the mine from No. 9 level up to No. 4 by hand-labour, with the exception of No. 4, where the large ore-body makes it possible to stope with machines. The output of quartz during the period under review amounted to 44,172 tons, this quantity being transported over the aerial tramway to the mill. At the mine no alteration of importance has been made, the only addition being a feed-water heater for the boilers supplying the compressor and hoisting-engine. At the battery the crushing-plant has been increased from forty to sixty-five stamps, the new twenty-five being of the same dimensions as the original forty. The erection of the new twenty-five was completed during the last week of February, since when they have been steadily at work. The power for driving the extra stamps is obtained by the substitution of a double nozzle instead of a single one as heretofore, the same 6 ft. Pelton being still in use. The old twenty-stamp mill has practically ceased to work, the final clean-up being now in hand. The old mill, together with the forty-stamp mill, put through 43,432 tons during the preceding twelve months, yielding 19,312 oz. 18 dwt. 1 gr., of the value of £80,295 19s. 5d. The chlorination works during the same period treated 887 tons of sulphurets, producing 2,579 oz. 11 dwt. 17 gr. of gold, of the value of £10,782 6s. 3d. A cyanide plant is now in course of erection, which is for the purpose of treating the old accumulated tailings. Six treatment-tanks, 25 ft. in diameter by 7 ft. in height, and three sumps, 25 ft. in diameter by 6 ft. high, are being built in wood. A 4 in. centrifugal Tangye pump will be used to throw up the solution to the treatment-tanks. The sands will be elevated by a blow-up into a launder, which will convey them to three Wilfley concentrators, after passing over which they will gravitate into the tanks for treatment, and be finally discharged into the main tail-race. The plant should be in working order shortly.

Golden Fleece Group.—During the period under review most of our work has been confined to the low-level tunnel. We struck the stone in April, 1899, and since have been pushing develop-

ment-work as much as possible, with the result that 2,393 ft. of driving, 1,069 ft. of crosscutting, and 350 ft. of raising has been done, besides which the main shaft, comprising three compartments, has been started from the low level and raised to a vertical height of 310 ft. This shaft has to reach No. 6 level, a vertical distance of 460 ft. from the low level, at which point a Lidgerwood hoist (geared double drum) will be stationed and operated on by compressed air. The shaft contains two compartments for hoisting, and one pipe and ladder-way, the overall dimensions being 13 ft. 2 in. by 6 ft. 2 in. A twenty-five-stamp mill is in course of construction, and will be driven by steam, the engine being of the compound undertype pattern, by Robey and Co., Lincoln. Alongside the mill engine will stand a duplex Rand drill compressor for ten drills, also another of five-drill capacity, giving the equivalent of fifteen drills for all purposes. Steam for the engine and compressor is to be generated by two Fraser and Chalmers 60 in. by 16 ft. multitubular exterior-fired boilers, and by one locomotive type boiler by Robey. The battery is of the same pattern as the Progress Mines. Concentration will be performed by Wilfley tables, after which the material will be cyanided. The battery is situate about 27 chains from the mouth of the tunnel, on the opposite side of Murray Creek, connecting which is a tramway crossing over a bridge about 60 ft. in height.

Wealth of Nations Group.—The principal work in this mine has been confined to opening up the 600 ft. level, sinking the shaft to the 700 ft. level, and opening up the 700 ft. level, besides making the necessary connections by means of winzes and raises from the 500 ft. down to the 700 ft. level. In all 1,450 ft. of driving and cutting has been done, 416 ft. of raising, 159 ft. of winze-sinking, and the incline shaft sunk 103 ft. Practically no stoping has been done in this mine during the period under review, the quartz milled having come from development almost exclusively. The work now engaging our attention is sinking the shaft to the 800 ft. level, driving north on stone on the 700 ft. level, and driving south on the same level. The result of the mill runs during the past twelve months show that 2,172 tons of quartz yielded 930 oz. 2 dwt. 3 gr. of gold, valued at £3,760 16s. 11d., or 8 dwt. per ton. An experimental cyanide plant on a working scale has been erected, in which 292 tons of tailings has been treated, yielding 49 oz. 15 dwt. of bullion, valued at about £184 5s. 8d. The results of these experiments prove the material to be somewhat refractory, causing a large consumption of cyanide and only a fair extraction of gold, but the gold is very readily precipitated when once in solution.

Welcome Company.—A small amount of raising was done from No. 5 Level, Welcome, after which our attentions were diverted to Specimen Hill, where, after repairing the low-level tunnel for the first 1,600 ft., we proceeded to drive south from this tunnel, and have driven 937 ft. towards the Welcome, looking for that company's line of reef. At the Just-in-Time shaft a hoisting-engine was installed, the poppet-legs strengthened, and the water drawn from the shaft, a steam-pump placed at the 200 ft. level, and the shaft sunk a further distance of 200 ft. Since then we have started drifting to try and intersect the stone worked by the old Imperial and Reform Companies. Before doing this it was necessary to divert the course of the creek to prevent it in flood-time cutting into the tip-head in close proximity to the shaft timber.

Mr. G. G. Dixon, general manager and engineer of the New Inkerman Mines, supplies the following information concerning his claim:—

New Inkerman Mines.—For the months of March, April, May, June, and July, of 1899, the mines were closed down during the general manager's visit to England. On the 7th August, 1899, work was proceeded with, and a No. 5 drive south from the low-level tunnel (1,033 ft. from mouth of tunnel) was started in order to pick up No. 2 Supreme reef to the south. The reef sought was struck on the 23rd November, at 989½ ft. from the low-level tunnel, the average driving per week by the rock-drillers being a record—viz., 66·95 ft. per week. On the reef struck, in drive south No. 5 from low-level tunnel (just referred to), drives east and west were opened up, and at the 31st March these had been extended on the reef 182 ft. and 203 ft. respectively, An uprise on the lode from the drive west has also been started. An uprise from drive west to No. 5 winze, No. 2 Supreme, for the purpose of ventilation, and to facilitate the working of ore-bodies in Golden Gully was begun on the 23rd February last, and had been risen 134½ft. up to the 31st March last. A drive from Golden Gully tram to connect with workings just referred to was started on the 23rd March, and at the end of the month had been driven 30 ft. The work of renewing the thirty-stamp battery was taken in hand in October last, and fifteen heads were completed and started crushing in April. A considerable amount of ore accumulated from driving operations on reef struck in drive south No. 5 from low-level tunnel. The company have been developing the property for four years without any return, and with the exception of the five months referred to at the beginning of this report the work has been carried on continuously. The company have expended £35,000 on the property in development-work, which includes some 12,000 ft. of driving, 1,300 ft. of sinking, and 300 ft. of uprising.

General.

The gold yield from the mines during the past year is greater than for some years past. The greater portion of the yield was obtained by the Progress Mines, demonstrating the advantages to be obtained from the proper development of a mine and the use of the most improved machinery and scientific treatment of ores. The company is now producing about eight thousand pounds' worth of gold monthly, and this will be increased when the cyanide plant starts operations. The Keep-it-Dark is now in full swing, and is profiting by the adoption of the cyanide process. The New Inkerman Mines have been crushing for a short time, and should the trial prove successful (as I believe it will) doubtless a much larger milling plant will be erected. The mill of the Consolidated Goldfields (for Golden Fleece Group) is nearing completion, and possibly may be working in three or four months' time. The Kirwan's Reward Company and Snowy Creek Company will shortly

start crushing. From all present appearances there is reasonable hope of the gold return for the current year exceeding that of last year by a fair amount. A large number of claims for dredging purposes have been granted during the year; indeed, nearly all the available ground has been taken up, but necessarily a very long time must elapse before any work can be done.

I am indebted to the managers and directors of the companies mentioned in this report for furnishing me with the material enabling me to compile it, and I desire to thank them for the assistance so readily given.

RETURN of PROSPECTING LICENSES and SPECIAL CLAIMS Granted by the WARDEN at REEFTON, for the Year ended 31st March, 1900.

PROSPECTING LICENSES (DREDGING).

Date of Grant.	Licensee.	Name of River or Creek.	Area.	Locality.
1899.			Acres.	
July 1	Malloy, T. J.	Inangahua	100	Black's Point.
Aug. 1	Hankin, H. G.	"	100	Near Landing Creek.
" 1	Uddstrom, Charles	Little Grey	70	Near Antonio's Creek.
" 1	Kerr, James	"	70	Near Stoney Creek.
Sept. 29	Doig, Alexander	Blackwater	20	Near Big River Junction.
Oct. 13	Stevenson, James	Inangahua	100	Near Boatman's Creek.
" 13	Naylor, Frederick	"	75	Near Inangahua Junction.
" 13	Butson, Thomas	"	70	South of and adjoining Stevenson's.
" 13	Aitken, R. M.	Coal Creek	40	A mile and a half from junction with Inangahua.
" 27	Pattinson, Timothy	Slab Hut	60	Near Tawhai.
" 27	Furness, Samuel	Antonio's	50	Near Township.
" 27	Cumming, Thomas M.	Big River	50	Near Cariboo.
Nov. 10	Rogers, Francis	Boatman's Creek	48	
" 10	Notman, Alexander	Inangahua River	100	North and adjoining Stevenson's.
" 24	McLarry, Patrick (freehold)	"	98	Cronadun.
" 24	Magnus, John	Inangahua	80	Near Reefton Bridge.
Dec. 8	Shannon, John	Devil's Creek	88	Near Golden Point.
" 22	Irving, Walter	Adamstown Creek	80	
1900.				
Jan. 12	Cairns, Robert	Devil's Creek	36	Near Golden Point.
" 12	Boatman's Creek Sluicing Company	Boatman's Creek	30	
Mch. 9	Gill, John	Snowy Creek	100	Three miles up from Grey Road.
" 9	Taylor, Joseph	Big River	68	
" 9	Gill, John	Mossy Creek	30	
" 9	Gill, John	Snowy Creek	60	Near Taylor's Clearing.

SPECIAL CLAIMS.

Date of Grant.	Name of Licensee.	Name of Claim.	Area.	Where situated.
		Quartz.		
1899.			A. R. P.	
Feb. 24*	G. J. Willis	Western Keep-it-Dark	30 0 0	Crushington.
Mar. 10†	G. Perotti	"	85 3 24	Golden Point.
" 10‡	Boatman's Exploration Gold-mining Co.	"	30 0 0	Victoria Range.
" 10‡	Ditto	"	29 2 30	"
" 10‡	"	"	29 3 30	"
" 10‡	"	"	5 3 10	"
" 10‡	"	"	30 0 0	"
" 10	Lord Edward Gold-mining Co.	"	16 2 6	Big River.
" 10	Big River Gold-mining Co.	"	37 3 0	"
" 10	Golden Lead Mining Co.	"	73 0 19	Merrijigs.
" 10	Hercules Quartz-mining Co. (Ltd.)	"	16 1 37	Crushington.
" 10§	R. Dumphy	"	62 3 15	Big River.
" 24‖	J. Morris	"	30 0 0	Merrijigs.
" 24	Hercules Quartz-mining Co.	"	16 2 0	Crushington.
" 24	Cumberland Extended Co.	"	10 0 0	Merrijigs.
" 24	"	"	28 3 0	"
" 24	"	"	29 3 36	"
" 24	"	"	57 2 9	"
April 7	Consolidated Goldfields, N.Z.	Cadman	100 0 0	Boatman's.
" 7	"	Blake	100 0 0	"
" 7	"	Salisbury	100 0 0	Black's Point,
" 7	"	Juno	49 2 0	Murray Creek.
" 7	"	Golden Fleece	95 0 0	"
" 7	"	Royal	99 2 0	"
" 7	"	Low-level Tunnel	100 0 0	Black's Point.
" 7	Kirwan's Reward Co.	Earl Brassey	29 3 30	Victoria Range.
" 7	"	Kirwan's Reward	29 3 20	"
" 7	"	Lady Brassey	29 3 31	"
" 7	"	Lord Brassey	93 2 4	"

* Surrendered 26th January, 1900. † Revival. ‡ Surrendered 15th September, 1899. § Surrendered 22nd December, 1899.
‖ Surrendered 29th September, 1899.

SPECIAL CLAIMS—*continued.*

Date of Grant.	Licensee.	Name of Claim.	Area.			Locality.
		Quartz—continued.	A.	R.	P.	
1899.						
April 7	Consolidated Goldfields, N.Z. ..	Caledonia	100	0	0	Larry's Creek.
" 7	" ..	Roseberry	100	0	0	"
" 7	" ..	Gladstone	100	0	0	Murray Creek.
" 7	" ..	Beaconsfield	100	0	0	"
" 7	" ..	Energetic	54	0	0	"
" 7	Welcome Gold-mining Co. (Ltd.)	..	16	0	26	Boatman's.
" 7	"	..	28	0	08	"
" 7	"	..	23	0	36	"
" 7	Lee and others	Sir F. Drake	100	0	0	Merrijigs.
" 7	" ..	Elliston	9	2	08	"
" 7	No. 2 Keep-it-Dark Quartz-mining Co. (Ltd.)	..	28	2	25	Crushington.
" 7	Do.	..	16	1	27	"
" 7	William Collins	Victoria	30	0	0	Murray Creek.
" 7	Keep-it-Dark Co. ..	..	21	1	36	Crushington.
" 7	" ..	..	34	3	38	"
" 21	Snowy Creek Co. (Ltd.) ..	..	100	0	0	Snowy Creek.
" 21	J. Stevenson	Albion	99	3	11	Murray Creek.
May 19*	J. Stevenson	..	99	0	25	Big River.
" 19	Charles Anderson	Maritana	24	1	30	Murray Creek.
June 1	J. Farrell	Phœnix	100	0	0	Snowy Creek.
" 1	T. H. Lee	New Era	100	0	0	Murray Creek.
" 1	J. Osbourne	New Year	34	2	17	"
" 1	W. G. Collings	United	77	1	25	"
" 1†	T. H. Lee	..	99	3	26	Globe Hill.
" 1	Mark Twain Gold-mining Co. ..	..	73	3	27	Victoria Range.
" 1	Consolidated Goldfields, N.Z. ..	Fiery Cross	60	0	0	Boatman's.
" 9	David Ziman	Wealth of Nations ..	63	1	13	Crushington.
" 9	"	Percival	29	1	11	Murray Creek.
" 9	"	Seddon	100	0	0	Boatman's.
July 1	Lee Willis	..	10	0	0	Lankey Creek.
" 1	William Keenan	..	25	1	4	Boatman's.
" 14	Progress Mines, N.Z.	Globe	13	2	30	Globe Hill.
" 14	"	"	5	0	0	"
" 14	"	"	15	3	33	"
" 14	"	"	22	3	20	"
" 14	Dillon Extended	..	30	0	0	Painkiller.
" 14	"	..	30	0	0	"
" 14	Progress Mines, N.Z.	Wedge	22	3	20	
Sept. 1	J. Stevenson	New Ulster	100	0	0	Murray Creek.
" 1	J. Dunne	Sirdar	99	1	0	Boatman's.
" 1‡	G. Lishman	..	30	0	0	Merrijigs.
" 1	D. Walsh	Searchlight	30	0	0	Big River.
Aug. 25	Progress Mines, N.Z.	Progress	89	1	10	Progress Junction.
" 25	"	Globe	52	2	12	Globe Hill.
" 25	"	Progressive	31	0	22	"
" 25	"	Larnach	100	0	0	"
" 25	"	Carroll	100	0	0	"
" 25	"	Ballance	100	0	0	"
" 25	"	Rose	100	0	0	"
" 25	"	Deep	98	3	6	"
" 25	New Inkerman Mines	Carbine	16	0	21	Merrijigs.
Sept. 1	Progress Mines, N.Z.	Oriental	8	0	0	Globe Hill.
" 15	St. George Extended Co. ..	St. George No. 2 ..	30	0	0	Big River.
" 29	Anglo-Continental Co.	Golden Treasure ..	67	0	0	Murray Creek.
Oct. 13	Joseph Walsh	Micawber	5	3	32	"
" 27	New Inkerman Mines	Carbine	100	0	0	Merrijigs.
" 27§	"	..	57	2	0	"
" 27§	"	..	33	0	0	"
" 27	"	Clarence	51	0	0	"
" 27	"	Wilson	99	0	9	"
" 27	"	Louisa	49	3	15	"
Nov. 10	St. George Extended Co. ..	Matthias	100	0	0	Big River.
		Alluvial.				
1899.						
June 1	R. J. F. Davie	Balfour Extended ..	20	0	0	Fryingpan.
" 1	J. Abercrombie and John Hart ..	Coal Creek	40	0	4	Coal Creek.
July 1	W. Irving	Balfour	30	0	0	Fryingpan.
Aug. 11	Lai Luen and Party	Flower's Creek ..	12	0	0	Flower's Creek.
Nov. 1	J. Connolly	Murray Creek ..	8	0	0	Murray Creek.
Dec. 1	J. Billett	Capleston Sluicing ..	8	0	0	Boatman's Creek.
		Dredging.				
1900.						
Mar. 24	A1 Gold-dredging Co.	..	29	2	21	Redman's.
July 1	J. O'Malley	..	20	0	0	Grey River.
Oct. 1	T. Pattinson	Electric Dredges ..	16	0	0	Snowy Creek.
" 1	"	Mawheraiti ..	16	0	0	Little Grey.
Nov. 1	A1 Gold-dredging Co.	Durban	12	0	0	Redman's.

* Cancelled, 8th December, 1899. † Surrendered, 26th January, 1900. ‡ Surrendered, 29th September, 1899. § Revival.

District of Westport Court.

Addison's.

All the old claims in this locality continue to give payable returns, but, unfortunately, this cannot be said of those more recently taken up.

The General Exploration Company spent many thousand pounds in preparing to work their Bendigo Claim on an extensive scale, and ground-sluicing operations went on for a time. The returns were not made public, but it is generally understood that they were very disappointing. No work has been done on the claim for several months.

The Addison's Long Tunnel Gold-mining Company (Limited) have been working steadily during the year. The returns have been fairly profitable and sufficient to enable the company to pay off the balance of the purchase-money. The amount of gold won from the claim during the year was 364 oz. 18 dwt. 23 gr.

The Virgin Flat Gold-mining Company (Limited) has spent considerable sums of money in preparatory works, and expects to be getting gold shortly. During the last twelve months the following works have been completed by this company: The main head-race has been completed, with the exception of a few short lengths of fluming, for a length of 3 miles 10 chains, 189 chains of which is open ditch, and 61 chains of tunnel in blue reef. The tunnel follows the course of the river from the end of the open race, and enters the Totara River at the company's main intake. The main tail-race, which is a tunnel 5 ft. 8 in. by 3 ft. 6 in. in the clear, has been driven for a length of about 2,112 ft., leaving 858 ft. to be driven. This will be completed in about four months. This tunnel will be lined throughout with sawn timber cut on the ground, the company having erected a sawmilling plant driven by water brought in from their dam, a distance of 35 chains, by a race 2 ft. by 2 ft. 6 in. consisting of about 10 chains open race, 17 chains of tunnel, 3 chains of fluming, and 4 chains of siphon.

All timber required for the construction of tables, fluming, &c., will be cut at the company's mill.

Waimangaroa.

The Westport Twin Gold-mines held 200 acres at Waimangaroa as special claims and went to heavy expense for battery, water-races, tunnels, &c. After crushing for a few months the claim was abandoned, and the company went into liquidation. The property was then sold and another company proceeded to work the claim, but again the result was unsatisfactory, and the mine is now standing idle.

The Britannia Gold-mining Company (Limited) has had many disappointments, the stone taken from different parts of their mine always proving to be poorer than they anticipated, and outcrops of rich stone, when opened up, proving to be only of small extent. Work is now confined to the eastern portion of the mine, where a 3 ft. reef shows payable gold. This stone is now being driven on, and a few tons have been taken out.

Several small parties are working in the bed, and on the banks of the Waimangaroa River, and are making fair wages.

Karamea.

A large amount of dead work has been done at McKerrow and party's sluicing claim, which, in the first instance, was unfortunately opened up at an unsuitable place, in consequence of which the tables were smothered by heavy falls of *débris*, causing serious delays and compelling the party to open up at another point. This has been successfully done. Sluicing has been going on for four or five months, and payable gold is being got.

All the other large claims at Karamea have been abandoned. A few small parties, fossickers and hatters, are scattered along the different creeks, and are probably just earning a living wage.

Mokihinui.

The quartz claims at Mokihinui have all been abandoned, and the few gold-miners still there are working small alluvial claims with varying results.

Fairdown.

The General Exploration Company holds two special claims at Fairdown, in connection with which they have expended several thousand pounds in preliminary works. Ground-sluicing was carried on for a few months with unprofitable results, and work then ceased.

Wellington Gold-mining Company (Limited).—This company was formed in August, 1899, for the purpose of buying Williams's freehold and taking 42 acres of Crown land, and so making a claim of 70 acres of sluicing-ground. A race has been constructed to carry twenty heads of water, its length being two miles and a half. Sluicing started on the 15th May. The wash is an average thickness of 30 ft. and not heavy. Character of gold, both coarse and fine. Formerly in this district —the "old diggings"—no effort seems to have been made to save the fine gold, which has simply been washed into the Buller; but this company is constructing tables specially to save fine gold. Sluicing only starting recently, there is no return or washing-up yet made.

Sea-beaches.

The sea-beach claims north of the Buller River are now practically worked out. For many years they supported a large population, but of late they have been getting poorer from year to year, and now furnish only a precarious existence for a few men who are mostly old-age pensioners. In fact, it is more than probable that without the aid which the pension affords these old miners would be compelled to abandon their claims.

Dredging.

A very large number of dredging areas have recently been taken up in the Westport district. In fact, nearly all the rivers and streams from the Okari in the south to the Oparara in the north

have been pegged out, and a little prospecting has been done, but the difficulty in getting plant and the want of capital will seriously retard progress in this direction.

General.

The stoppage of the Westport Harbour-works has thrown a large number of men out of work. Some of them have succeeded in getting employment in the timber and flax industries, which, fortunately, are somewhat brisker than usual just now. There are, however, many men still looking in vain for work.

RETURN of MINING PRIVILEGES GRANTED by the WARDEN at WESTPORT for the Year ended 31st March, 1900.

Date of Grant.	Name of Licensee.	Privilege Granted.	Area. A.	R.	P.	Where situated.
1899.						
May 2	Patrick O'Brien	Prospecting (D)	100	0	0	Rongahau District.
" 5	The Addison's Gold-sluicing Co. (Ltd.)	Special claim (S)	55	0	20	Addison's.
" 16	J. Wall and C. O'Sullivan	Prospecting (D)	80	0	0	Totara River.
June 1	A. G. Hill	Special claim (S)	32	1	2	Old Diggings.
Aug. 2	John W. McLeod	Prospecting (D)	100	0	0	Buller River.
" 2	Frederick Clifford	"	40	0	0	Buller River.
" 2	Thomas Alexander	"	24	0	0	Mokihinui.
" 2	Edward Seager	"	24	0	0	Mokihinui.
" 16	R. Johnson, jun.	"	100	0	0	Karamea.
" 16	Edmund Blaxall	"	109	0	0	Cascade Creek.
" 16	David Mitchell	"	32	0	0	Granity Creek.
" 16	John W. McLeod	"	50	0	0	German Creek.
" 16	Herbert Robins Cooke	"	80	0	0	Karamea.
" 16	"	"	50	0	0	German Creek.
" 16	"	"	100	0	0	Jones's Creek.
Sept. 6	Edward R. Issell	"	60	0	0	Karamea.
" 6	Donald McLellan	"	18	0	0	Ngakawau.
" 6	Patrick O'Brien	"	65	0	0	Mokihinui.
Aug. 31	James Major and party	Special claim (S)	25	1	33	Addison's.
Sept. 1	The Addison's Long Tunnel Gold-mining Co.	"	55	0	20	Addison's.
" 19	The Virgin Flat Gold-mining Co. (Ltd.)	"	99	3	35	Virgin Flat, Addison's.
" 19	"	"	99	3	38	Virgin Flat, Addison's.
" 19	"	"	97	1	6	Virgin Flat, Addison's.
" 20	Alexander Stitt	Prospecting (D)	100	0	0	Karamea.
" 20	William Johnson	"	40	0	0	Oparara, Karamea.
" 20	Daniel O'Neill	" (S)	90	0	0	Fairdown.
" 20	William Champion	" (D)	15	0	0	German Creek.
" 20	John C. McKerrow	"	100	0	0	Karamea.
" 20	John Patrick Baily	Special claim (D)	20	0	0	Buller River.
Aug. 1	Edward George Braddon	" (S)	73	1	21	Addison's.
" 1	"	"	94	3	39	Fairdown.
Oct. 6	Thomas Samuels	Prospecting (D)	50	0	0	Jones's Creek.
" 6	Donald McLean	"	50	0	0	Oparara, Karamea.
" 6	T. Robertson and G. Sangwall	"	20	0	0	Coal Creek.
" 6	Wallace Mackenzie	"	50	0	0	Waimangaroa.
" 6	Michael Williams	"	50	0	0	Addison's.
" 24	William Gould and party	Special claim (S)	10	2	28	Addison's.
" 23	Edward C. Kingswell	Prospecting (D)	50	0	0	Mokihinui.
" 23	Edward Tythall	"	40	0	0	North Beach.
" 23	Alexander Stitt	"	100	0	0	North Beach.
" 23	Walter McIntyre	"	60	0	0	Mokihinui.
" 23	T. Pounch and D. Scarlett	"	18	0	0	Mokihinui.
" 23	Wallace Mackenzie	"	50	0	0	Waimangaroa.
Sept. 1	Margaret Sullivan	Special claim (S)	99	3	26	Addison's.
" 1	T. Bailie and G. Griffiths	" (Q)	100	0	0	Mokihinui.
" 1	Golden Sand Gold-mining Co. (No Liability)	" (S)	100	0	0	Addison's.
" 1	William Mellekin and party	"	41	2	37	Addison's.
Oct. 23	Britannia Gold-mining Co. (Ltd.)	" (Q)	93	3	39	Ngakawau.
Nov. 15	Edwin C. Kingswell	Prospecting (D)	50	0	0	Stony Creek.
" 15	Andrew J. H. McFarlane	"	50	0	0	Symons Creek.
" 15	Herbert Robins Cooke	"	60	0	0	Gyles Creek.
" 29	Thomas Johnston, jun.	Special claim (D)	11	0	0	Ngakawau.
" 29	R. Johnson Luten	Prospecting (D)	40	0	0	Karamea River.
" 15	Charles Adalbert Ulrich	Special claim (D)	20	0	0	Buller River.
" 15	Edward Tythall	"	20	0	0	Buller River.
1900.						
Jan. 16	Thomas Powich	Prospecting (D)	20	0	0	Orawaiti Flats.
" 16	Wallace Mackenzie	"	60	0	0	Orawaiti River.
" 16	Edwin C. Kingswell	"	80	0	0	Orawaiti River.
" 16	Thomas Johnston, jun.	"	100	0	0	Orawaiti Beach.
" 16	John A. Newell	"	80	0	0	Karamea River.
" 16	Benjamin Walters	"	90	0	0	Oparara River.
" 16	"	"	90	0	0	Oparara River.
" 31	Robert Steele	"	100	0	0	Stony Creek.
" 31	J. Duggan and party	Special claim (S)	13	0	37	Bradshaw's Terrace.
" 31	Henry Warne and party	"	20	0	0	Virgin Flat, Addison's.
" 31	Philip McEnroe	"	20	0	0	Addison's.
Mar. 15	G. A. Price and M. Smith	Prospecting (D)	100	0	0	Totara River.
" 15	Charles A. Ulrich	Special claim (D)	52	2	0	Buller River.
" 15	"	"	52	3	0	Buller River.
" 15	"	"	55	3	0	Buller River.
" 1	Charles Lines and party	" (S)	18	0	0	Bradshaw's Terrace.

District of Lyell and Murchison Courts.

Dredging.

Lyell and Murchison districts have not escaped the rush for dredging properties, which has been so general both in Otago and the West Coast. Almost all the available ground in the two districts named has been taken up as special dredging claims and prospecting areas, but it is interesting to note that the majority of the applications coming before the Court of late have been for prospecting areas. These districts might be termed the pioneers of dredging on the West Coast, as it is now a number of years since the old spoon-dredge prospected a large number of beaches in the Buller River. The older type of dredge has also had its day, both on the Matakitaki and Buller, and is now being rapidly replaced by the most modern and up-to-date plants. That there are large areas of dredgeable ground in these two districts there is little doubt, and there is every prospect that a good proportion of the ventures will be made to pay,

The Buller Dredges (Limited) have for a number of years been at work near Fern Flat, in the Upper Buller. Altogether their operations have proved payable, their old dredge having won steady and profitable returns for some years, and their more recently constructed dredge has until recently been working on payable ground. It is now operating on a large beach near Toi Flat, and is in some distance from the river secure from all floods. This ground has unfortunately been good enough to pay working-expenses only, but there is every prospect of an increased return being obtained a little higher up the beach, in which direction the dredge is at present working. It is now about fifteen months since the building of the dredge was completed, and it is a good, strong, compact, and well-constructed plant.

The Consolidated dredge, formerly the "Cocksparrow," is the only other dredge at present at work on the Buller, and is operating near Three Channel Flat, about thirty miles from Westport. The sum of about £2,000 has been spent during the year in remodelling the dredge, and bringing her as near as possible up to date. The lifting-capacity has been considerably increased, and a saving made in the consumption of fuel. She has also been fitted with elevators, and all weak parts thoroughly strengthened. The dredge is now working steadily, and shareholders are expecting to obtain good returns as soon as the face is well opened up.

The Four River Plain Company has been actively employed during the year building a large dredge immediately above the Buller dredge's ground, and about three miles from Murchison. The pontoons have been launched, and the machinery is being delivered to the ground as quickly as possible. The company holds a special claim of 100 acres, and also has the right to work 100 acres of freehold land adjoining. The ground is well situated near the Matakitaki Junction, and is well spoken of by miners in the locality.

The Mokoia dredge has been floated, and now awaits the machinery to be placed in her. The plant will be a large one, and especially strong, to deal with some heavy, but good ground, which has been proved on the claim. The lease is situated ahead of the Consolidated Company's ground, and has been well prospected by the old "Cocksparrow" dredge.

The other dredges on the Buller in course of construction are the Old Diggings, the Rocklands, the Premier, and the Buller Junction, all situated between Berlin's and the Inangahua Junction. All the ventures are well spoken of.

The Matakitaki dredge has been laid up almost the whole year. The plant is very old and quite out of date. Trouble arising between the employers and the workmen, operations have been temporarily suspended. A new company with a strong capital is now being formed to take over the property with the view of thoroughly overhauling the dredge, and again starting work.

There are a large number of leases taken up in the Matakitaki, which are being prospected; but so far the actual building of the dredges has not started, although the successful flotation of one company to work an area near Murchison has been notified.

Quartz.

The only quartz-mine in active operation is the Alpine Extended Gold-mining Company's property, and the Lyell Township is mainly dependent upon the results from this mine. It is an old claim, having been working since 1874, and has a splendid record. The value of the total production of gold is over £275,000, and the shareholders have received more than £74,000 in dividends. During the past year a large amount of work has been done, fifty men having been employed almost the whole time. The company's twenty-head stamper battery has been kept constantly at work up till quite recently, but the stone treated has been of low grade. Stoping has been steadily progressing above the Nos. 10 and 11 levels on bodies of stone varying from 3 ft. to 20 ft. wide. The No. 11 level has been opened up north of the main shaft, and the No. 9 extended in the same direction for 90 ft. Two winzes have been sunk below No. 11, the lowest level, and proved the reef to be living down strong underfoot. The No. 7 level (400 ft. above) is being extended north on the line of reef, and the prospects met are very encouraging. Much interest is being taken in this work, as a favourable development in this portion of the mine would be of the greatest importance, giving as it would at once a fresh turn of prosperity to the old mine. Since last month operations have been carried on with a very few hands, causing rather a depression in Lyell business circles.

Alluvial.

The alluvial workings are generally confined to the efforts of individual miners, and the Matakitaki Valley will always support a large number of this class. The terraces along the Buller as well as its gold-bearing tributaries also provide a means of livelihood for a number of miners.

An excellent sluicing property near White's Point, belonging to Messrs. Neville and Perkins, has latterly been attracting the attention of outside investors. A scheme for bringing in a large supply of water from the Newton River to work this and the adjoining ground is now on the *tapis*.

Mr. George Walker continues to work his sluicing claim in the Maruia with good results, and a small rush took place to Rappahanock Creek in the same locality, but the ground is only large enough for but very few miners to get into.

RETURN of MINING PRIVILEGES GRANTED by the WARDEN at LYELL for the Year ended 31st March, 1900.

Date of Grant.	Name of Licensee.	Privilege granted.	Area.	Where situated.
1899.			A. R. P.	
April 26	Four River Plain Gold-dredging Co. ..	Special dredging claim ..	97 2 0	Buller–Murchison.
July 13	Robert Fleming	Prospecting license ..	100 0 0	Matakitaki–Matakitaki.
Aug. 1	James Cowan*	Special dredging claim ..	64 0 0	Buller–Murchison.
" 1	Thomas Crumpton*	"	70 2 21	"
" 1	Buller Dredges Co.*	"	61 0 27	"
" 1	Percy N. Kingswell†	"	49 2 0	Matakitaki–Murchison.
Sept. 14	William White	Special sluicing claim ..	20 0 0	Horse Terrace–Matakitaki.
Oct. 2	William Robertson	Special dredging claim ..	47 1 20	Matakitaki–Murchison.
Nov. 9	R. W. J. McNeill	Prospecting license ..	100 0 0	Matakitaki–Matakitaki.
" 9	Edward Woolhouse	"	100 0 0	"
" 9	John Gow	"	100 0 0	"
1900.				
Jan. 11	Charles A. Ulrich	Special dredging claim ..	41 1 19	Buller–White's Point.
" 11	"	"	34 2 28	"
Mar. 8	Henry David Abbott	Prospecting license ..	40 0 0	Matakitaki–Murchison.
8	"	"	15 0 0	"
" 8	"	"	15 0 0	"
April 26	Della-Vedova and others	Special sluicing claim ..	97 2 2	Three-channel Flat.
May 18	Henry Forbes Budge	Special dredging claim ..	19 0 0	Buller–Inangahua Junc.
" 18	William P. Smith	Prospecting license (quartz)†	25 0 0	Eight-mile–Lyell.
" 18	Alfred Smith	Special dredging claim ..	20 0 0	Buller–"Berlins."
" 18	Thomas Joseph Malloy	"	20 0 0	Buller–Three-channel Flat
July 13	Percy N. Kingswell	"	8 0 0	Buller–Inangahua Junc.
Aug. 1	J. H. McKay	"	83 1 25	"
" 1	Robert W. Shallcrass	"	56 1 22	Buller–Old Diggings.
" 1	Henry Forbes Budge	"	62 2 39	Buller–Inangahua Junc.
" 1	Alpine Extended Gold-mining Co.‡ ..	Special quartz claim ..	96 3 28	Lyell.
" 1	" ‡ ..	"	57 3 32	"
Sept. 14	James Stevenson	Special dredging claim ..	20 0 0	Buller–Inangahua Junc.
" 14	James H. McKay	"	18 0 0	"
Oct. 2	Mokoia Gold-dredging Co.	"	59 0 0	Buller–Three-channel Flat
" 2	Consolidated Gold-dredging Co. ..	"	88 3 33	"
" 2	Thomas Hubert Lee	"	35 3 20	"
Nov. 9	Thomas Joseph Malloy	"	25 0 0	Buller–"Berlins."
" 9	Thomas Hubert Lee	Prospecting license ..	80 0 0	Inangahua–Inangahua Jn.
" 9	George Walker	"	65 0 0	Buller–Rocklands.
" 9	James H. McKay	"	60 0 0	Buller–Inangahua Junc.
" 9	Thomas Hubert Lee	"	80 0 0	Buller–Lyell.
" 9	Frederick Feddersen	Special dredging claim ..	15 0 0	"
Jan. 11	Rocklands Beach Gold-dredging Co. ..	"	100 0 0	Buller–Rocklands
" 11	Hans C. Hansen	"	52 2 20	Buller–Three-channel Flat
" 11	Albert Cedarman	"	60 2 0	"
" 11	Elizabeth D. Feddersen	"	35 2 0	Buller–Lyell.
" 11	Frederick C. Feddersen	"	47 1 0	"
" 11	Thomas J. Malloy	"	64 3 1	Buller–"Berlins."
" 11	Alfred Smith	"	51 0 0	"
" 11	George Walker	"	98 3 0	Buller–Rocklands.
" 11	Thomas Foster	Prospecting license ..	20 0 0	Lyell Creek–Lyell.

* Surrendered. † Cancelled. ‡ Exchanged title only.

I have, &c.,
ROBERT HAWKINS, Warden.

The Under-Secretary, Mines Department, Wellington.

Mr. Warden MACFARLANE to the UNDER-SECRETARY FOR MINES, Wellington.

SIR,— Warden's Office, Hokitika, 31st May, 1900.

I have the honour to forward herewith the mining statistical returns for the year ending 31st March, together with my annual report on mining matters generally, in the district under my charge.

HOKITIKA.

The gold returns from this district for the year just ended would indicate that, although the number of men employed in this industry has not increased, the gold won is considerably in excess of that of last year; consequently the men are being better paid for their labour and investments, and this notwithstanding the many drawbacks they have to contend with in the shape of want of water and tailing-accommodation, pointedly referred to in my last year's report. This want is acutely felt by claimholders on Seddon's Terrace and Back Creek who were not fortunate enough to get shares in the syndicate who purchased Hendley and Co.'s races and dams. Those claims on Back Creek and Seddon's Terrace held by the owners of Hendley Race are paying handsomely, but even they could utilise double the quantity of water to advantage.

Last year a number of said claimholders purchased Hendley and Company's water-rights for £8,000 on time-payments, paying interest at the rate of 8 per cent. The first payment of £1,000 has been made, together with the interest due. Extensive repairs and alterations have been made to dams and races, and the property is in first-class order, and, as showing the value of the ground, I have been informed that the whole of the indebtedness of the company will be paid off in a much shorter time than was anticipated. The necessity for a much larger supply of water is becoming more imperative every day, and the advisability of proclaiming at least the lower reaches of the Hokitika River is more urgent than ever. The Kanieri Lake water-supply is contingent on the river being proclaimed. The company is still tunnelling through the terraces from the lake to Butcher's Gully, and has already constructed 3,000 ft. in connection with the race.

The claims about Kanieri Forks are still turning out a fair amount of gold; they obtain water from the Kanieri Lake Race Company, and but for this magnificent water-supply hydraulic mining in the district would be impossible.

Craig's claim is still giving good returns. Goudie and party of tributers worked up for the fortnight to the value of £45 of gold, and Chesterman and party, also tributers, £124. This claim has produced gold to the value of something like £27,781, and it is reported that Craig has sold out to a company for £4,500 cash and £1,000 paid-up shares. The freehold consists of 470 acres.

Holley's Claim (adjoining Craig's), also freehold, is under offer as a dredging venture for £1,600 cash. This claim has also produced a large amount of gold (to the value of over £10,000), and is said to contain payable gold under the water-level. Like Craig's, it is a series of beach runs, or leads, overlying each other, but also largely overlaid by the high terrace-formation at the back. Bottom has never been touched on the flat in front of the terraces, so that the depth is unknown.

The whole of the ground in this neighbourhood, and right up to Lake Mahinapua, is now held, or applied for, as prospecting areas and claims.

A new and improved dredging-plant is being erected on McIntosh and party's claim on the Shanghai Lead, near the landing. Good returns having been obtained in the portion worked by the original shareholders, a new company was formed to work the ground—a beach lead—dry. The results of working our beach leads dry are looked forward to with considerable interest, as the large percentage of loss of gold by the ordinary method of dredging in the water is well known to dredging experts. Mr. Bishop, the engineer for the company, is fully satisfied of the feasibility of his method of thus dealing with our beach leads. Most experts estimate the loss at not less than 30 per cent. under the old or wet method. I fully indorse Mr. Bishop's method of dealing with our beach sand leads, and look for a rapid and marked advance in what may be called "dry-dredging" in connection with our beaches, whereby a much larger percentage of gold will be saved, and the cost of production in the shape of less costly plants be materially reduced.

Following the line of the Shanghai Lead referred to, we come to a number of prospecting areas of 100 acres each, on what was known as the "Aylmer Lead." Only one party of miners are at work here (Sharp and Son's Extended Claim), working on face of terrace, and said to be making wages at sluicing. The prospecting areas extend to the mouth of the Totara River and Kanieri.

An attempt to drain Upper and Lower Commissioner's Flat was made by Main and party, and Singer and party, both being subsidised by the Government, but, so far, they have not succeeded. Within the last few months nearly the whole of the district has been applied for as prospecting areas and special claims, taking in both subsidised tunnels, with the consent of all parties concerned. The same applies to the Hokitika, the Kanieri, and Kokotahi Rivers. The Hokitika is applied for from the boating-shed within the borough boundary to the junction of the Whitcomb River. In some places where the river-bed is wide, claims are pegged three abreast.

In connection with the dredging-claims held in the immediate neighbourhood of the Kanieri and Woodstock, a powerful company has been formed to acquire the Kanieri Lake Water-race, for the purpose of providing motive-power for the installation of a powerful electrical plant to operate their dredges, and furnish light and water for same. The matter has been eagerly taken up, and in a short time we hope to see the work started. Where there are ten or twelve powerful dredges to supply with power, light and water, there can be no question as to the economic value to be obtained.

Owing to the continued success of dredging in Otago, and the arrival on the Coast of dredge-owners and experts from Alexandra and other well-known parts, our attention was called to the capabilities of the Coast as a dredging-field, with this result: that special claims were applied for, and options over well-known properties were eagerly taken up by our visitors; and from then until now the interest in our river-beds, flats, and beaches has so increased that a perfect dredging *furore* has set in, and every likely spot is pegged off and applied for. Many of the mining experts who have visited the Coast express themselves as highly satisfied with what they have seen and learned, with this result: that speculation is already rife, and shares jump to a premium even before the promoters have obtained a permanent title to the ground they have applied for, and as often as not before a shilling has been spent in prospecting, or proving the value of the ground or the so-called gold-mine.

The special claims and licenses applied for in connection with dredging cover approximately 24,000 acres. The applications for prospecting licenses are largely in excess of those for special claims, and may be accounted for by the fact that only a £5 deposit for a 100-acre area is required in applying for a prospecting area, whereas in special-claim applications from £20 to £60 is required; hence the large number of prospecting licenses. Here I would call attention to a course of procedure that obtains in this district in connection with prospecting licenses, which is bound sooner or later to lead to serious trouble. Holders of prospecting licenses have formed and are floating companies without having secured a permanent title. When a special claim is applied for over the

prospecting area there may be valid objections raised in the Warden's Court, in face of which the Warden may not see fit to recommend the grant, and even if it was recommended, the Minister of Mines might refuse his consent; hence the necessity for investors looking to the validity of the so-called titles held by promoters, and offered to the public for subscription. Many such companies are floated on the strength of the names of the promoters without seeming regard to either titles or value of property put on the market, the work of flotation goes on apace, the shares are taken up, and before application is made for a special claim, or the ground surveyed, shares are quoted at a premium in companies who have absolutely no permanent title of any value to the property they are offering to the public.

The demand for dredging areas is as keen as ever, and so long as the company-promoter can place his property on the market as a prospecting area, he will not go to the trouble and expense of getting a valid title. Such procedure is detrimental to legitimate mining, but can only be put a stop to by the public refusing to invest in such ventures. In this connection I may be allowed to give a note of warning, not to the professional speculator, but to the investing public who may be led astray by a cunningly drawn prospectus. I am not saying that any of the claims taken up and placed on the market are valueless as gold-mines, for in a highly auriferous country like the West Coast, one never can tell where alluvial gold may be found in payable quantities; but if the investor puts his money into a venture where he expects to get a return in dividends declared from the gold won from the mine he should see to the validity of the title, and that reasonable proof is forthcoming that the gold is in the ground. It must be apparent to any one who gives the matter the least thought, that to be reasonably safe, the ground should be thoroughly proved by boring, shaft-sinking, or, better still, by sinking cylinders, and when water is met with, using air-locks. This latter method is the only one by which our river-beds and lagoons can be successfully dealt with, and the sooner company-promoters realise this the better. That we have large areas fit for dredging is admitted by most of the mining experts who have been here, and I have no doubt we have, but let us be careful to see, not only that claims are taken up in likely places, but that they have been honestly prospected with satisfactory results before they are offered to the public.

The difficulties arising out of such a rush of application for dredging areas are many, but the most serious is, that of the regulation dealing with the time allowed for getting to work. Parties, having secured their ground, are granted six months to procure and erect their plant, and if good cause can be shown, another six months may be granted—that is, if reasonable diligence has been shown in the erection of the plant; but, with hundreds of dredges to be built and erected on the West Coast alone within twelve months, and taking into account the present output power of all our foundries and machine-shops in New Zealand, and the scarcity of skilled labour for pontoon-building, I fear that only a small number will be able to comply with the mining regulations as they at present exist. To get over the difficulty a larger discretionary power must be placed in the hands of the Wardens, when dealing with dredging companies whose *bona fides* are undisputed. This can be done by amended regulations.

The Humphries Gully Company have a large number of men at work on race-construction to carry water from the Arahura River, and until this is finished the supply will at times be inefficient and intermittent. A large amount of money has been expended on this property by the present as well as by the original company, and the early completion of the present company's extensive hydraulic works is looked forward to with considerable interest.

Individual mining is almost at a standstill in the Arahura Valley, but, looked at from a dredging point of view, we may look forward to a period of great activity on this river. A great number of prospecting licenses were and are being applied for on this river, and a number granted, but all proceedings were stayed when it was found that the Natives laid claim to the whole river-bed, from the sea to its source. Applications were held over to enable the Warden to state a case for the Supreme Court. This was done, and His Honour the Chief Justice decided that the Natives were entitled to the river-bed within and fronting their reserves, so that the Warden's jurisdiction was ousted, the remainder of the river-bed being Crown lands. Nothing is known as to what action the Public Trustee will take in the matter. This river is highly thought of, as likely to prove payable and suitable for dredging purposes. In the meantime, as far as the river-bed in the reserves is concerned, the matter is in abeyance.

Dwyer's tunnel on the south side, going towards the Blue Spur, has now been driven about 3,000 ft., but, I regret to say, without striking payable gold. They have failed to find what is known as Boy's Run, which it was thought would be cut by this tunnel.

Stafford Sub-district.

With the exception of the rush of applications for dredging-claims and prospecting areas, there has been no perceptible change in mining matters in this sub-district. Most of the miners hold extended claims of from 1 to 5 acres, and are making small wages. The only special claim at work is the Wheel of Fortune, and they are still engaged in development work in connection with their water-supply. Their elevating plant will also require remodelling, as in its present state, as shown by their published returns for the year, it appears to be totally inadequate to deal with the quantity of wash-dirt that would even cover working-expenses.

Another large undertaking is the Kelly's Terrace Tunnel. This is a subsidised drainage-tunnel, managed by trustees, designed to drain a large area of supposed auriferous country in Gillam's Gully and neighbourhood. 4,768 ft. has been driven, but, owing to a dispute between the trustees and contractor, nothing has been done since December last, and the work is now at a standstill. There is still 1,200 ft. to be driven before the objective point is reached, and before anything can be known as to the value of the ground to be drained.

A large number of beach-dredging prospecting claims have been applied for and granted in

the Court at Stafford, but they are in the initial stage yet, and require careful prospecting before being converted into special claims. The same remarks apply to Goldsborough, the Upper Waimea, Kawaka, and Kapatea, being all taken up as dredging areas.

The subsidised tail-race brought into the Upper Waimea has been constructed as far as the first claims on the flat, but there seeems to be no disposition on the part of those on whose behalf the race was constructed to make use of it. The dual control, under which this and other subsidised races have been constructed, has not given entire satisfaction, and the matter wants careful looking into.

KUMARA SUB-DISTRICT.

This district shows no signs of improvement, and may be said to just hold its own. An increased water-supply, obtained from the Wainihinihi, will soon be available, and with this the returns may not diminish. The great length of the tail-races necessary to work the back part of the terrace necessitates an increased water-supply to make it pay.

A hundred-acre claim was applied for in the neighbourhood of the Nos. 3, 4, and 5 Channels, but was refused on the ground that it was wanted by the ordinary miner, who was prepared to work it in extended claims areas of from 1 to 5 acres.

On the Greenstone, all the creek is now held as dredging-ground, and several dredges are building and getting ready to work. Good dredging prospects have been obtained, both in the Teremakau and the Greenstone Creek, and both streams stand a fair chance of being worked. The Greenstone Junction Claim, having their plant well advanced, will be first to get to work, and the general opinion is that this will be a payable claim.

A good number of men are at work sluicing into Greenstone Creek, and I hear they are doing fairly well. The same applies to parties to the north, the scarcity of water being the great drawback. The old Duke of Edinburgh Company's race is almost idle, and will require to be extended further west before it will be of much use. Another race in the same neighbourhood, owned by Harris and others, is in the same position, and to be of use it must be carried further.

The population remains about stationary—about two thousand five hundred, of which one hundred are Chinese. Most of the Chinamen are on the Greenstone and Westbrook terrace, and are doing fairly well; they are very orderly and well behaved.

The whole district is very peaceable, and little or no crime is reported.

Sittings of the Magistrate's and Warden's Courts are held fortnightly. There are also sittings of the District Court every two months.

Notes supplied to the Warden by Mr. Aitken, Manager Government Water-races, Kumara.

Waimea.—No new ground has been opened during the year, and the old ground worked has been poor. The miners in the back gullies have had a good year, as the water-supply has been fairly good throughout. The number of miners employed on the field is about the same as last year. The old ground is nearly worked out where it was at all payable, but considerable areas of poor ground are still unworked that with better methods, and plenty of water, would pay wages. The Waimea Mine tail-race has been completed, and arrangements are being made to construct private tail-races from the several claims into the main race. The races and dams for supplying water to the claims have also been completed, and before long a fair start should be made in several of the claims in Middle Branch Flat.

In the Stafford district Kelly's Terrace drainage-tunnel has, during the year, been driven a further distance of 1,200 ft., and although the main bottom has been reached, gold in payable quantities has not been found. About 1,200 ft. has yet to be driven to reach the Hinemoa shaft, where good ground was said to have been prospected some years ago. The progress of this drainage-tunnel has been very much retarded by disputes between the trustees and the contractors, which are still unsettled.

In the Wheel of Fortune Claim a change has been made in the management, and about three miles and a half of race-extension is being proceeded with, and will be finished shortly. This race, when completed, will bring in about six sluice-heads of water from Foxe's Creek, which will be a valuable addition to the present supply owned by the company.

In Calighan's, Menzone and party's claim continues to yield profitable returns, and several parties of Chinamen are working in the district.

On the dividing spur, between Italian Gully and the left-hand branch of the Waimea Creek, there is a large area of payable wash if water in quantity could be obtained. One party has been at work there for many years, and is known to be doing very well. He holds a monopoly of all the water available at present. A large claim has been applied for, said to be for dredging purposes, on the lower side of the old and the present workings; but I am afraid there will be considerable difficulty in operating dredges in this and many other localities that have been taken up, on account of the depth of bottom.

Kumara.—Here a large quantity of material is being sluiced away daily. The whole of the known good ground has been worked, and the ground still to work, although consisting of gold-bearing wash, is poor in comparison with the ground formerly worked on this field; still, with improved methods and plenty of water, sluicing will be carried on for many years to come. Little or no work has been done by the Deep Level Company during the year; and although the Mines department has authorised the sinking of another shaft, and driving another 300 ft., the company has not yet taken the advantage of the promised subsidy. The amount authorised to be spent on this work was £450, of which the department was to contribute £300, and the company £150. The ground passed through by the deep-level tunnel may be said to be almost unprospected, no prospecting having been done except in driving the tunnel, and one or two jump-ups in the gravel overhead. There are, however, three or four parties still working on the deep levels, and they

have driven adits from the face of the terrace at the tailings site in the Teremakau River. Some of these parties have been earning fair wages, and one party is doing well. There is a probability of the subsidised work being done by the parties referred to, which would lead to the opening-up of the country further back, and under the Kumara lead, which has hitherto been worked on a false bottom.

No. 5 main tail-race is now completed, and four or five of the claims are engaged in opening up this ground. Until the claims are fully opened up, it will be impossible to judge of the payable nature of the ground, but the owners of the claims have every confidence that the ground will pay well.

The race to bring water from the Wainihinihi is now nearly completed, all the tunnels being driven, and the principal work remaining to be done is boxing the rock through which the tunnel was driven. This rock, although very hard, is of a very broken character, being full of fissures, and boxing will be necessary to make the race carry water in an efficient manner. This water will largely supplement the present supply, and may enable the miners to work even poorer ground than they are now working, with as good results.

Ross Sub-district.

Aside from the excitement over dredging areas, there is little to note in connection with the mining operations that have been carried on for years in this district.

The Mont d'Or Sluicing Company is a steady producer, and shilling dividends are paid with great regularity.

The Prince of Wales Company has been reconstructed, and the new company are about to put on a powerful dredge to work this ground.

The Ross United Tributers are still at work, making small wages. This company is now in liquidation, and an effort is being made to float a company to work this valuable property by means of an electric plant, plans, &c., of which were prepared by Mr. T. Perham, C.E. A prospectus has been circulated, showing how the company propose dealing with the ground on the deep levels. This may be said to be the only deep-sinking alluvial claim on the Coast where gold in payable quantities at eight different levels has been found and partially worked, the real bottom not yet having been reached. The present depth reached is 392½ ft., but it is thought another 100 ft. may have to be sunk before the bed-rock is reached. The Government have offered to give £15,000 as a subsidy if the company agree to erect works in accordance with the plans furnished by their engineer. A strong effort is being made to get a company up to undertake this work, and should they succeed in getting the balance of the capital required, and carry out the work as set out by the engineer, I have no doubt that Ross Flat will provide payable work for hundreds of men, besides leaving a handsome profit to the company.

Nothing whatever is doing in quartz-mining. Dredging, however, is very much in favour at present, and the first bucket-dredge in the locality is now fairly at work on the Totara River. The wash in the river being somewhat heavy, there is a good deal of wear-and-tear about the buckets, but the initial difficulties have been overcome, and a fair run is anticipated. The exact amount of gold won has not been made public, but it is said that the returns are satisfactory. The Totara River, Donnelly's Creek, Mikonui River, and the lines of beaches, both north and south, have all been taken up as dredging areas, and plants are being built, or ordered, for the working of some of them.

A subsidised drainage-tunnel to drain a portion of Donnelly's Creek is in course of erection; the Borough Council is the controlling power, and in this case the work was let to a party of miners, who put in their labour in lieu of money. A block of ground of about 50 acres is reserved for them to select an acre-claim each out of the 50 acres reserved—the balance, after the tunnel is completed and the selections made, to be open to any one having a miner's right. This work is now at a standstill, owing to a dispute about the rate of payment by the Government. I understand that since the commencement of the work the price has been raised on two occasions: now the contractors demand a further increase, and the Inspector refuses to recommend it, as he considers the price sufficient. No work has been done for a considerable time, and I presume the Borough Council will shortly take steps to determine the contract, and put other men on the work.

A large number of claims (dredging areas) have been taken up on the Mikonui River and neighbourhood. The Kohinoor Claim, at the mouth of Redman's Creek—that in former days yielded such large returns of gold, and that became unworkable owing to the quantity of water met with—seems to be made use of for giving tone or character to all the claims within miles of it. Experts' reports invariably point to this claim and the large returns of gold as sufficient reason for putting plants on the particular claim they are reporting on. No doubt it is an advantage to be in the neighbourhood of rich ground; but this should not do away with the need for careful prospecting, on their employers' account, on the property they are supposed to be reporting upon. But I am afraid too much is taken for granted by many of our so-called experts, and disappointments will follow in consequence thereof. Equally misleading is the nomenclature of claims. This should be as carefully looked to by the Registrars as trade-marks are in ordinary business. The plans for the Kohinoor dredge are well in hand, and I understand from Mr. Bishop, the engineer for the company, that tenders will shortly be called for for the construction of the plant and pontoons. This, I think, will be the third dredge to get to work on the Coast.

The difficulty experienced in getting orders for dredging-machinery fulfilled has led to the proposed establishment of a large foundry and machine-shop in Hokitika, for the special purpose of dredge-building. Whether the project will assume concrete form will, I suppose, mainly depend on the number of shares that can be disposed of. The prospective rush of business contingent on even a fourth of the claims requiring plants should be sufficient inducement for the undertaking.

Very large areas on the beaches, lagoons, and rivers in this district have been taken up as dredging-claims, and should the holders use reasonable diligence in prospecting, and be able to show payable gold, it is only a question of capital and time when this new departure in gold-mining will add immensely to the output of gold and to the general prosperity of the district.

Okarito and Jackson's Bay Sub-districts.

The most important feature in connection with mining in the Okarito district during the year was the successful completion of the waterworks of the Waiho Hydraulic Sluicing Company. From thirty-five to forty Government heads of water are constantly available at the company's claim on the terraces near the mouth of the Callary River. The water was brought from the Totara River at a cost of some £8,000, and was turned on in the end of May last year, when a face was opened up on the banks of the Waiho River; but the returns from this face not proving satisfactory it was abandoned. On the arrival of Mr. Bloxam, managing director, from London, a new face, showing first-class prospects, was opened up. It now shows a face of 130 ft., with the wash dipping into the hill, the lower strata showing clean river-gravel and boulders. This face was worked for some months, and a large amount of material dealt with; but, notwithstanding the good prospects obtained in the face, the washing-up has not come up to expectations, and the whole of the works have been stopped pending the arrival of an expert from London. The prospects on which the company was floated were obtained from an old tunnel and an open paddock 15 chains from where the face was opened, and the race will require to be extended to that point before an opinion can be given as to the value of the claim. All the evidence points to the fact that they are on the southern bank of an old river-bed—most probably the Callary—and until this is crossed by a cut taken in by the water, or by level adit, the value of the claim cannot be even approximately fixed. It is characteristic of the auriferous wash found in the Callary River that it is only in the wash near the bottom, or bed-rock, that the heavy deposits of gold are found. It is therefore necessary that the race should be extended to the points where the gold was found by the old miners, or else prove the bottom of the old river-bed by drifts or adits. I have a strong belief in the ultimate success of this claim, and trust the company will yet benefit largely by the undertaking.

A number of men are working in the flat opposite the mouth of the Callary, and when the river is low a good deal of gold is won. A party of men are at present bringing up a tail-race, assisted by subsidy from the Government, to drain this flat, and if they are successful a number of good claims will be opened up and worked.

On this river, as elsewhere, a large number of prospecting areas have been applied for, and several special claims. The same on the Okarito River and Lagoon, and nearly all the beaches.

The road to the Waiho is being formed and widened, but it will be some time yet before drays can be taken through from the lake.

The overland road from Hokitika is now available for dray-traffic as far as the Wataroa, and only three miles more—from Gunn's to the Waitangi—remains to be widened, to enable vehicles to get right through to Okarito.

In the absence of bridges light punts are badly wanted on the Big Wanganui and the Wataroa Rivers. Communication by sea is kept up by the steamer "Jane Douglas" making monthly trips. The "Waipara" is still lying sunk in the lagoon, and although attempts have been made to lift her, they have not yet succeeded.

The overland road from the Waiho River to Cook's River will shortly be opened for pack-horse traffic. A slight deviation has to be made on account of a heavy slip on the original line. From Cook's to the Makawihu, or Jacob's River, the road is nearly finished.

In the Jackson's Bay district very little in the way of mining is being done, the settlers being mostly engaged in stock-raising. Some very rich prospects of gold were found at the mouth of Bullock Creek, and the ground has been applied for as a dredging area. Seven prospecting dredging areas have been applied for on the Haast beaches—one at Barn Bay and two at the Gorge River and Brown's Refuge beach. In connection with this block, a pack-track from Barn Bay is badly wanted. An expenditure of about £300 would open up a block of country that would carry a large mining population. The approach by sea is too dangerous—as witness the many valuable lives lost on several occasions in attempting to open communication with the shore. This block—from the Hope River to Big Bay—being at the extreme south-west end of the County of Westland, and uninhabited, is not considered by the county authorities: they receive no revenue from it, and consequently spend nothing in helping to open it up. I would therefore suggest that the Mines Department take this matter in hand, and render available a large and valuable tract of country that will be eagerly taken up by the miners, and that will repay the outlay a hundredfold.

Communication with Haast is kept up by two-monthly trips of the s.s. "Jane Douglas," and with the East Coast and the Sounds by the s.s. "Hinemoa" coming south about every three months. Telephonic communication has been established at a number of ferries on the rivers, and this will be a great boon to travellers, who, from being unable to communicate with the ferryman, had often to spend the night on the river-beds. This will deprive the mailman of a much-made-use-of excuse when behind time with the delivery of the mails.

CONCLUSION.

In conclusion, I have to observe that the Coast is fairly prosperous. There are very few idle men about, and in some cases great difficulty is found in getting men suitable for the work, especially in pontoon-building, where shipwrights are required; and, in view of the large number of dredges likely to be required, the difficulty in obtaining suitable men will be more pronounced than at present.

The increased activity in mining matters, as shown by the number of applications dealt with in the various Courts since the beginning of the year, will, when they get to work, largely increase

the output of gold, but in the meantime it is having the contrary effect, as hundreds of men are now engaged in connection with dredging that were working claims of their own.

I have not been able to check the gold-returns this year as compared with last year, but I shall not be surprised to learn that in some districts a considerable falling-off has taken place, due to the dredging-boom, and in a lesser degree, to so many men being employed on roadworks.

I have, &c.,
D. Macfarlane, Warden.

The Under-Secretary, Mines Department, Wellington.

Mr. Warden Stratford to the Under-Secretary for Mines, Wellington.

Sir,— Warden's Office, Dunedin, 20th April, 1900.

I have the honour to forward herewith my statistical returns respecting the Hindon Goldfields for the year 1899–1900. Nothing of any importance has been done on the field during that time. The number of miners remains the same as last year (under fifty).

The chief alluvial workings are those of the Deep Stream Amalgamated Hydraulic Sluicing Company (Limited), which is still paying dividends, but the yield of gold for the first year is less by 369 oz. than that of 1898–1899.

Some prospecting areas have been taken up on the Taieri River with a view to ulterior dredging operations, but so far without result.

Quartz-mining is at a standstill, the Barewood Company having done no work owing to litigation.

Miners are still distributed over the field fossicking and working ground about the old workings.

I have, &c.,
H. A. Stratford, Warden.

The Under-Secretary, Mines Department, Wellington.

Mr. Warden Stratford to the Under-Secretary for Mines, Wellington.

Sir,— Warden's Office, Lawrence, 26th April, 1900.

I have the honour to forward to you herewith statistical returns for the year ended the 31st March ultimo, and submit the following report on the several mining districts under my charge for the same period :—

The activity in mining still continues. A large number of applications have been lodged in all the Courts throughout my district.

Lawrence.

Three dredges have been working during the past year on the Tuapeka Flat and River, below the Lawrence Township.

The Evans Flat and Tuapeka Dredging Companies have obtained fair returns and paid monthly dividends. Messrs. J. Harris and party's dredge has been working steadily, with fair average returns.

The Balclutha Dredging Company, who held a claim about six miles below Lawrence, on the Tuapeka River, went into liquidation during the year, and sold the dredge and claim to a local syndicate. A new company was formed and called the "Lawrence Dredging Company (Limited)." The old dredge was overhauled and almost made new; it started work in January last, and by the end of March had paid a three-shilling dividend. The property is considered a good one and likely to last for some years.

Wetherstone's.

The Golden Rise Dredge has been working on the Wetherstone's Flat for the whole of the year, with fair returns. It is the property of a private party, viz.: Messrs. Smyth, Adams, and Donlan, who also hold a hydraulic-sluicing claim in the same locality, still yielding, I understand, very good returns.

The Golden Crescent Sluicing Company (Limited) have now got their hydraulic-sluicing claim opened up. The directors are satisfied with the returns so far, and are of opinion that they have a good property. The water-race is completed and is bringing in about eight heads of water from Deep Creek, Waipori, to Wetherstone's, a distance of about seventeen miles, at a cost of about £4,000.

Blue Spur.

The Blue Spur and Gabriel's Gully Consolidated Gold Company (Limited), (Mr. J. H. Jackson, general manager), has been working steadily for the greater part of the year. The yield of gold was 2,753 oz., valued at £10,875.

Messrs J. Kitto and party are still working their claim at the head of Munro's Gully, with satisfactory returns.

Messrs Mills and Browne have shifted their hydraulic plant lower down below the mouth of Munro's Gully, and are, I understand, doing fairly well. They have a good water-race, and have had a fair supply of water nearly the whole of the summer.

Dredging on the Clutha River.

The Clutha River from the Tuapeka Mouth to the Talla Burn, above the Beaumont, a distance of about twenty miles, has all been pegged out, and special dredging-claims have been granted over the greater part, and a number of applications are still pending. So far, only one dredge is at work on this part of the river, viz.: the Sunlight, working at Horse-shoe Bend with varied success.

Several other companies have commenced the construction of their dredges.

The starting of a modern up-to-date dredge to work the river below the Beaumont Bridge will be eagerly watched, and should it turn out a success it will be the means of opening up a large dredging-field.

WAITAHUNA.

The Imperial Dredging Company have been working steadily for the year, with very good returns.

Two new dredges have been built here during the last six months, one by Messrs. McCormick and party and the other by Messrs. McKenzie and party.

Another dredging-claim of about 50 acres has been taken up at Waitahuna Gully. The company has been floated and arrangements are being made to put on a dredge.

All the sluicing-claims at the Waitahuna Gully have been working steadily during the year and getting fair returns.

The German Flat Hydraulic Sluicing Company recently sold their claim and plant, situate at German Flat, to Messrs. Moses Girvan and party.

GLENORE.

The following dredges are still working at Glenore, viz.: the Stirling, the Woolshed, and the Golden Bank, and are all doing well.

The Riverbank Dredge (situate between Glenore and Milton) is nearly completed.

WAIPORI.

There are now eight dredges working in this locality. All those that belong to public companies and publish their returns are doing very well indeed, and I have every reason to believe that those held by private parties are also doing well.

The Golden Key Gold-mining Company's sluicing-claim, on account of the want of pressure in the water-supply and other difficulties in working the claim, has not turned out a success as yet.

Mr. W. J. Farrell has been working on Mr. Cotton's freehold throughout the year, getting, I am informed, very fair returns.

The Bakery Flat Sluicing Company get very good returns when their water-races (which are at a very high altitude) are not interfered with by a long spell of dry weather or continuous frosts.

The Post-office Creek (Waipori) Gold-mining Company has not turned out a success so far, and the company is about to make arrangements to increase the capital and give the claim another trial.

The O.P.Q. Gold-mines (Limited) employs a large number of men, and has done a great deal of work in opening-up the reef during the last twelve months. The company has also imported and erected a good deal of expensive machinery, and the mine is now yielding good returns; 851 oz. were won for the year.

Messrs. W. E. S. Knight and W. E. Caudwell have opened up a sluicing-claim during the year, and named it "The Lammerlaw Flat Hydraulic-sluicing Company." They have a good water-supply, and the claim is, I understand, yielding very fair returns.

I may add that mining generally in this locality is in a very healthy condition.

WAIKAIA.

There has been considerable activity in mining in this locality during the year. No less than 250 applications for claims and other mining privileges were lodged at the Warden's Court, and the revenue collected by the Receiver of Gold Revenue amounted to £586.

Several of the hydraulic-sluicing claims are yielding very good returns; the Argyle Company, for instance, obtained over 900 oz. of gold for the year.

The Piano Flat Gold-mining Company have nearly completed a water-race from the Blue Lake, at a cost of about £2,000, to work their claim on Piano Flat.

This field is now likely to be thoroughly tested for dredging-purposes.

The Nugget Dredge, which has just been completed, has started to work on the Waikaia River above Glenary, and the prospects are said to be good.

Numerous other parties in different parts of the district are making arrangements for placing dredges on their properties.

GORE.

During the last twelve months much interest has been taken in dredging operations in this district, and a good deal has been done in the development of that industry, particularly in the Valley of the Waikaka, where five dredges are now at work, and six in course of construction. Those at work are said to be doing very well.

Dredging operations at Waikaka would be much more advanced than they are had it not been for the opposition offered by some of the settlers and Messrs. Wallis Brothers, fellmongers, to the application which has been made to have the Waikaka River declared a sludge-channel. A great many of the claim-holders are waiting till the result of that application is known.

The Mataura River, from the Mataura Township to Riversdale, a distance of about thirty miles, has all been taken up under special dredging-claims or prospecting-licenses, but as yet only one dredge, owned by Messrs. Graham Brothers, has been put on the river, and it is now working about a mile from Gore. Being a private concern the returns are not made public, but it is supposed to be paying fairly well.

The Charlton Creek Company's dredge is on a creek of the same name, about three miles to the south of Gore. It commenced work about three months ago, and up to the present the returns have been fairly satisfactory.

At Waimumu there is only one dredge at present working, viz.: The Waimumu Gold-dredging Company. Two others are being constructed, viz.: the Waimumu Queen and the Waimumu Central.

The only other mining operations carried on in this district are by a few Chinamen working sluicing-claims at Waikaka Valley.

TAPANUI.

A good deal of prospecting has been done in this district during the past year, particularly in the vicinity of the Pomahaka River. One dredge has been constructed recently to work a claim at Scrubby Flat. Beyond this there is nothing new to report.

I have, &c.,
H. A. STRATFORD, Warden.

The Under-Secretary, Mines Department, Wellington.

Mr. Warden DALGLEISH to the UNDER-SECRETARY for MINES, Wellington.

SIR,— Warden's Office, Naseby, 24th April, 1900.

I have the honour to forward herewith the annual return and statistics of the mining industry for the Mount Ida District, and in doing so submit the following remarks:—

There have been but few changes in the general workings in the district to comment upon during the past year. No new discoveries of any significance have been reported. The rainfall has been very satisfactory in most parts of the district, and consequently the supply of water for mining has been proportionately good. A great deal of attention has been paid to dredging, leading to very noticeable activity in many portions of the district; but I regret very much I am not in a position to report favourably on the results so far. Several of the companies which have been inaugurated for that class of mining have been compelled to cease operations. Whether that has been caused by an actual scarcity of gold in the wash treated, or defective manipulation by the dredges, I cannot say with certainty, but I incline to the latter opinion. So far as I am informed, undoubtedly good prospects were obtained in every instance before dredges were built and placed on the claims, but the issue in several cases has not been by any means equal to the prospects. I am of opinion that the preliminary prospecting carried out was not sufficiently exhaustive in many cases, and too hasty conclusions as to the payable nature of large areas were arrived at when only small portions of the whole were exploited.

The disappointment experienced by the companies alluded to in the immediate past will, I hope, be the means in the future of more complete initiatory work being insisted on before large expenditures are incurred in dredge-building. Many more dredging-claims have been and still are being taken up, and there appears to be little or no doubt that most of them will be given a good trial.

The phenomenally rich yields obtained by some of the dredging companies on the Clutha River have raised the usual *furore* on the part of a large section of the public to secure opportunities for investment in dredging. Consequently, a very large number of companies have been floated for that purpose throughout the district, including the Manuherikia River and its tributaries, Ida Valley, Taieri River down as far as Middlemarch, Naseby, Kyeburn, Macrae's, and Shag River; indeed, I may say that the whole district, in a mining sense, seems to be in a state of transition from a sluicing and elevating system to dredging. I sincerely hope the favourable anticipations indulged in and expressed by many experts may be fully realised. It is certain that if even a comparatively small proportion of the ground taken up for this class of work should prove as payable as expected, it will mean a most favourable change in the district, for outside of this activity there is no doubt that there is a gradual shrinkage in other descriptions of mining. I trust this may be only temporary.

The works on the Eweburn Reservoir are being carried out in a satisfactory manner, and are approaching completion. I am informed that the quantity of water being saved and utilised so far is in excess of anticipations, and there is every ground for believing the undertaking will be of great benefit to the whole neighbourhood.

The elevating-claims in the vicinity of Naseby have been carried on with a fair amount of success, and I believe I am justified in saying the same with regard to the ordinary sluicing operations, but nothing sensational has been reported to me.

From the various outlying portions of my district I am in receipt of the following information:—

At St. Bathans the majority of the claims have been worked with satisfactory returns. Hesson and Simmonds have had a good season with regard to water, and worked a considerable area of ground in their claim on the east side of the Manuherikia near Hawkdun. Garty and Gallagher's workings at Surface Hill have also given good returns, making some amends for their somewhat unfortunate endeavours during the last year or two. The Scandinavian Water-race Company have recently increased their supply by purchasing the St. Bathans Water-race Company's property, enabling them to work two claims at that place, it is believed with considerable success. The United M. and E. Company has also been enabled to keep working pretty constantly, and, I am informed, with satisfactory results.

Considerable improvements have been effected on the St. Bathans Channel under the supervision of Mr. Eagle. It is now in good working-order, and is proving beneficial to those discharging tailings therein. Improvements have also been made on Muddy Creek Channel.

Mr. John Ewing has been carrying out his works on some of his claims with energy, as usual. His Vinegar Hill claim has been in pretty constant work, with returns, I believe, about equal to former years; his Cambrian ground is now worked out. At Vinegar Flat he has altered the position of the plant from Cambrians to that place, and has been prospecting there, but I hear

the results were not all that could be desired. He has a claim at the upper part of this flat, but it has been idle for some little time through the supply of water failing. He has become the proprietor of Excell and Coulson's ground, and is working it; good results are expected. Work on Mr. Ewing's well-known Kildare Hill claim has not been continuous, but he has been enabled to work a considerable area of shallower ground adjoining, and I understand it has proved quite satisfactory.

Messrs. Fordham and Gay are understood to have had a prosperous year, their water-supply having been good.

At Black's, Matakanui, and Ida Valley, whilst little or no alteration can be noted in the old workings, there has been considerable activity shown with regard to dredging ventures, but the majority of the companies have not got beyond almost the initial stages of flotation. A very considerable period must of necessity elapse before it can be definitely known whether they will be successful.

The Ophir dredge, working on the River Manuherikia and the flats in the immediate vicinity of Ophir, has, I regret to say, been compelled to cease operations, the ground not proving payable. The company has been enabled to dispose of their dredge to a Southland company at, I believe, a satisfactory figure.

The Klondike Company at Matakanui have quite recently been enabled to start work; it would be premature, at this time, to say if it is likely to turn out remuneratively.

The Blue Duck Company, at Drybread, are pushing on the work in connection with their dredge, their pontoons being completed. The owners of adjoining claim, the Grey Duck, are having plans prepared for their dredge.

I believe another attempt will probably be made in the near future to work the deep lead at Black's No. 3, which is known to be very rich, but most difficult to work, in consequence of the constant inflow of drift and water.

There are still a few men working about German Hill, but I fear their earnings from mining have been very small.

A few of the very old men in various parts of the district have been compelled to take advantage of the beneficent provisions of the Old-age Pensions Act.

At Hamilton's, mining is not in a promising condition at all, and at present I see but very little chance of any improvement taking place; the number of miners left there is now quite inconsiderable.

At Patearoa and the Taieri River, upwards to the Serpentine, there has been some little stir *re* dredging, and it is quite within the probabilities that the ground may turn out fairly payable for that class of work. I have been asked by petition to alter the sittings of the Courts from Hamilton's to Patearoa, a course I have recommended to be adopted.

At Hyde, mining has not shown any improvement during the past year—the old workings are no longer offering inducements to continue them. Consequently, miners have been gradually leaving or directing their attention to other pursuits.

On that portion of the Taieri River lying between Hyde and Middlemarch there has been a certain amount of prospecting carried out for dredging. One dredge is now approaching completion, and there are several companies formed to carry out further operations in that locality if the dredge alluded to should prove successful.

At Kyeburn there has also been some disappointment in regard to dredging. More than one of the companies have ceased operations. Fortunately, purchasers have appeared for the dredges, and they have been removed elsewhere. Other companies are coming to the front, building new dredges of large capacities. The Naumai Company have their pontoons finished and afloat, waiting their machinery. Their water-race is completed, and it is expected they will be enabled to commence work about two months hence. The old-established miners have been working with fair results, no noticeable alterations taking place.

At Macrae's and that locality, alluvial mining has been quiet. The only instance of special success has again fallen to Chinese miners working at Horse Flat, where a party of them has been reported to have returned to China with £1,000 each.

The Messrs. Donaldson are reported to have enjoyed a very successful season in their Golden Point Claim. Their scheelite workings are stated to have been highly remunerative, and show indications of a continuance.

Mills and party are also reported to have had a good year with their small plant on a reef previously worked for a return up to 7 dwt. per ton. Mills is credited with obtaining a large quantity of gold for the year and every prospect for a continuance for some years to come. Their success is well merited.

The One Ounce Reef party have not yet got fairly to work. They are stated to have about 300 tons of stone ready for treatment, and it is expected to give a return up to an ounce per ton.

A reef has been taken up by a party near Mareburn. They have machinery on the ground and expect very good returns, judging from present appearances. An area of ground has been granted near the Mareburn, where promising indications of a considerable body of scheelite have been discovered.

At Mount Highlay work has been systematically carried out, with fairly favourable return.

The Bonanza Mine has been still further developed, although crushing has been somewhat retarded by failure of the water-supply.

Nenthorn is pretty well deserted, the mining population having nearly all left.

Shag Valley has attracted a number of people for dredging, and with apparently a much better prospect of success than has been attained in many other portions of this district. Dividends have been paid by at least one of the companies, and other dredges are being constructed.

The agricultural and small pastoral settlers have enjoyed a very good year, and are on the whole, I think, in very prosperous positions. The further opening-up of the land and progress made in the railway-works are each contributing to the advancement of the district.

The revenue has kept up fairly well.

STATEMENT OF BUSINESS IN COURTS AND REVENUE COLLECTED.

Complaints in Warden's Courts, 26; ordinary applications received, 441; special claims granted, 48; miners' rights issued, 375; water-race licenses, 179; general registrations, 593; revenue collected, £1,431 5s. 3d.; deposits on applications, £1,541 8s. 6d.

Magistrate's Court.—Civil cases, 113; criminal cases, 74.

I have, &c.,
S. MEAD DALGLEISH, Warden.

The Under-Secretary, Mines Department, Wellington.

Mr. Warden MCCARTHY to the UNDER-SECRETARY for MINES, Wellington.

SIR,— Warden's Office, Clyde, 24th April, 1900.

I have the honour to enclose herewith the annual statistical returns, and to submit the following report on mining matters in the Dunstan-Wakatipu subdivision of the Otago Mining District, for the period ending the 31st March last.

HYDRAULIC-SLUICING AND QUARTZ-REEFING.

There is scarcely anything of note to chronicle in connection with either of these branches of the industry; both continue to be somewhat neglected for mining by means of dredges. As showing the extent to which this has taken place, there is appended a comparative return (Schedule I.) showing the number of claims granted during the year, distinguishing between those granted for dredging and those for other classes of mining, together with the gross area and rental payable in respect of each.

The only attempt, so far as I can learn, to float a hydraulic-sluicing company of any magnitude is that relating to the Mid-Molyneaux Company, the object of which is to elevate 100 acres held by the promotor, Mr. John Ewing, at Anderson's Flat, about twelve miles below Roxburgh. The proposed company will have a water-right, ample not only for doing the necessary elevating, but also to provide power to drive by electricity a limited number of dredges, and affords a curious example of linking an older with a newer form of mining.

DREDGING.

This system continues to be that to which public attention is being chiefly directed. During the year there have been granted in this subdivision 217 dredging-claims, having a gross area of 11,885 acres.

The number of companies promoted to work dredging areas up to the 31st March last is 137, having a gross nominal capital of £4,452,826. Of this, £215,450 was absorbed in promoters' shares, and £985,676 in contributing-shares actually allotted, of which £518,042 has been called up. In some of the companies all the contributing-shares have not been allotted.

Taking into account the premiums at which the shares in by far the larger number of companies are freely selling, and the number of dredges constructed or in course of construction (the number cannot be less than a hundred), the present value of the dredging interests located in this district cannot be less than £2,500,000. The continued activity in dredging matters has caused an increase during the last two years of 614 men employed in the iron-foundries in Dunedin, the numbers being 1,016 men in January, 1898, 1,144 men in January, 1889, and 1,630 men in the same month of the present year.

There is attached to this report a return (Schedule I, Table B) giving certain particulars in connection with those dredging companies, the operations of which are confined to this district, and in this connection I would remark that last year I took occasion to remark on the number of "wild-cat" schemes attempted to be foisted on the public. The warning is as much needed now as then.

In addition, a rash spirit of speculation would seem to have taken hold of all classes of the community. Mining shares are being taken up by those who cannot hope to pay the calls, and who are merely buying in the hope of selling-out at a premium. Further, a practice is gaining ground of buying shares for what is euphemistically termed "forward delivery." The buyer, so-called, who often has no capital, agrees to pay at some future time a price in advance of the market-value at the date of sale. On the expiration of this time the shares are again sold, when the buyer either receives the profit or pays the loss. It need hardly be said this practice in no sense savours of investment, and reduced to its elements is neither more nor less than a wager between the buyer and seller, whereby the former bets against a fall in prices. This practice, however profitable to the sharebroker and however disastrous it may eventually turn out for those practising it, cannot succeed in eventually killing a promising industry, though it may introduce into the management of mining companies many of the worst features of the turf, and inflict on the industry itself a set-back from which it may take years to recover.

It may be deemed worthy of consideration whether too much of the capital of the companies is not being devoted to the purchase of promoters' interests. The price paid for these interests usually ranges from £1,000 to £2,000. The interests, for the most part, are nothing more than an unprospected claim without machinery. Now, to procure the grant of such a claim cannot, at the outside, cost more than £50.

A fair proportion of the shares allotted to promoters finds its way into the hands of those who can be prevailed on to sign reports as mining experts, who have either inspected or mined on or in close proximity to the claim, and it is making too great a draft on human credulity to suppose that many of these experts do not give rein to their imaginations in proportion to the number of paid-up shares promised to be allotted them. And the fact must not be overlooked that a certain proportion of these promoters' shares are given to the promoting broker in addition to the commission allowed him as promotion-money. Keeping these facts in view, it is only a fair inference that a judicious lessening of the proportion of the capital of companies allotted to promoters might decrease the risk of undesirable properties being placed on the market.

Suggested Amendments in Mining Law.

Appeals.—In order that the public may have confidence in the administration of justice, it is necessary that the right of appeal, without being possible of use as an instrument of oppression, should yet be effective. At the present time the remedy by way of appeal from the Warden is ineffective. Section 283 of the Mining Act provides that the appellant shall, amongst other things, serve on the opposite party a notice of appeal within ten days of the decision being recorded. Now the term "serve" has been interpreted not only by the District, but the Supreme Court, to mean personal service. The result is, that of late in one or two instances the successful litigant in the lower Court has succeeded in eluding service of the statutory notice until after the prescribed time had expired. I think the difficulty can be met by regulation. (See subsections 32 and 44 of section 302.)

Mining Privileges in Respect of Private Lands.—Attention is directed to sections 56, 57, and 58 of the Act. It will be observed that no provision has been made for the registration of privileges granted in respect of private lands, and registered under either "The Deeds Registration Act, 1868," or "The Land Transfer Act, 1886," and it is quite possible for an owner of private lands to acquire, or consent to another acquiring, a mining privilege having such lands for its subject. A company may be promoted to acquire the privilege, and simultaneously with this promotion the owner may sell his estate in the land to a third person who may have no notice of the grant of the mining privilege, and who may intend to use the land for purely agricultural or pastoral purposes. This state of the law may not only lead to serious complications but even to the perpetration of frauds on the public. Meantime, and until a remedy is provided, it would be as well for those dealing in private lands situate in mining districts to search the mining records, in addition to those compiled under the Deeds Registration and Land Transfer Acts.

Marking-out and Making of Applications for Mining Privileges.—As the principal Act and the regulations made thereunder were drawn, it was doubtful whether the filing of the application might not precede the marking-out of the land. I ruled that it might, but am convinced that the more convenient method is for the marking-out to precede the filing of the application. The obscurity was attempted to be cleared up by section 4 of the amending Act of 1899, but the only effect has been to make confusion more confounded. The subsection repealed by section 4 only relates to private lands, and only deals with the specific case of granting races over these lands; and my decision, in so far as it relates to Crown lands, would seem to be left untouched. The whole matter is at present under review by the Supreme Court in Dunedin; and I would suggest a simple provision: that the filing of any application for a mining privilege should be preceded by the marking-out of the land the subject of the application, and if such filing is not so preceded, the application should be void.

Mining Surveys.

Delay in effecting Surveys.—I would direct attention to the delay which has taken place in the survey of claims. For this delay the Survey Department is in no sense responsible; but it is noteworthy that at the end of the financial year there were in this district 250 applications for claims adjourned pending completion of survey. This did not delay, it is true, the promotion of companies to work the land, investors greedily applying for the shares offered for subscription as soon as the preliminary hearing had been disposed of; but the loss of revenue to the local bodies concerned is serious, as rent does not commence to accrue until the survey has been completed, a grant made by the Warden, and the consent of the Minister given in those cases where the statute requires that consent.

Survey of Mining Privileges in respect of Private Lands.—The heads of the Survey Department are of the opinion that plans of these surveys should not issue for indorsement on licenses for mining privileges in respect of private lands. The reason given is that two titles may not issue in respect of the same piece of land. The titles issued to the private owners by the Land Transfer and Deeds Registry Departments give the grantees no right to the gold, and it is to confer this right that the mining licenses are issued. Thus, although two titles issue in respect of the same piece of land, they are not in respect of the same right. It need hardly be pointed out it is the Warden and not the Survey Department who has to decide whether mining licenses applying to private lands are or are not to issue, and if the Warden makes an order for the survey of these lands with a view of granting a mining privilege thereover, it is the duty of the Survey Department to carry out that order. That department, in adopting its present practice, is setting at nought the will of Parliament, unequivocally expressed. I think the difficulty could be overcome by regulation. (See subsection 37 of section 302.)

Revenue.

The revenue shows a substantial increase at all but one of the six offices from which titles are issued, and this notwithstanding the reduction in rentals effected by the Act of 1898. The figures are as follows: Clyde, Alexandra, and Roxburgh, £3,025 6s. 9d., as against £3,044 12s. 2d. for the year 1898–99; Cromwell, £1,795 6s. 4d., as against £1,125 17s.; Queenstown, £1,223, as against £1,100; and Arrowtown, £421, as against £380. The total revenue is thus £6,464 13s. 1d., as against £5,670 19s. 2d., for the previous year. There should be a further increase next year, as the rents on claims granted this year will by then be doubled.

"The Gold Duty Abolition and Mining Property Rating Act, 1890."

The increase over last year in the valuation under this Act is £164,200, and this notwithstanding that two of the counties interested reduced, or had their valuations reduced, although a large number of additional dredging-claims had been granted within their borders during the year, and companies floated to work them.

I have, &c.,

S. E. McCarthy, Warden.

The Under-Secretary, Mines Department, Wellington.

SCHEDULE I.

TABLE A.—RETURN of DREDGING COMPANIES carrying on Business in Dunstan-Wakatipu Sub-district of Otago Mining District, 31st March, 1900.

Name of Company.	Amount of Nominal Capital.	Amount of Promoters' Shares.	Amount of Contributing Shares.	Amount of Contributing Shares called up.
	£	£	£	£
Alexandra Bonanza Gold-dredging Company (Ltd.) ..	15,000	3,000	12,000	4,800
Alexandra Lead Gold-dredging Company (Ltd.)	14,000	3,000	11,000	5,500
Alpine Consols Gold-dredging Company (Ltd.)	7,500	2,000	5,500	3,300
Alpine Gold-dredging Company (Ltd.)	6,000	..	..	..
Alpine No. 2 Gold-dredging Company (Ltd.)	5,500	700	4,800	3,360
Arrow Junction Gold-dredging Company (Ltd.)	8,500	2,000	6,500	2,600
Arthur's Point Gold-dredging Company (Ltd.)	9,000	1,800	7,200	2,880
Bald Hill Flat Freehold Gold-dredging Company (Ltd.) ..	11,000	1,600	9,400	6,110
Bannockburn Creek Gold-dredging Company (Ltd.) ..	10,000	2,000	8,000	4,800
Bendigo Gold-dredging Company (Ltd.)	11,000	2,500	8,500	2,550
Bengerburn Gold-dredging Company (Ltd.)	1,800	..	1,635	1,635
Boundary Creek Gold-dredging Company (Ltd.)	8,000	2,000	6,000	3,000
British Lion Gold-dredging Company (Ltd.)	7,500	1,500	6,000	600
Cairnmuir Gold-dredging Company (Ltd.)	8,000	1,350	6,650	3,325
Cardrona Lead Gold-dredging Company (Ltd.)	6,500	1,500	5,000	500
Cardrona No. 1 Gold-dredging Company (Ltd.)	5,500	1,200	4,300	2,150
Cardrona Valley Gold-dredging Company (Ltd.)	5,500	1,000	5,400	2,250
Central Electric Gold-dredging Company (Ltd)	7,000	1,000	6,000	3,000
Champion Gold-mining Company (Ltd.)	12,000	..	..	..
Chatto Creek Gold-dredging Company (Ltd)	5,500	500	5,000	5,000
Clyde Dredging Company (Ltd.)	4,000	..	4,000	4,000
Coal Creek Flat Dredging Company	10,000	2,000	7,000	1,750
Criffel Lead Dredging Company (Ltd.)	6,500	1,200	5,300	530
Cromwell Gold-dredging Company (Ltd.)	7,000	..	7,000	7,000
Dart River Gold-dredging Company (Ltd.)	25,000	5,000	20,000	3,000
Diggers' Pride Gold-dredging Company (Ltd.)	8,500	2,000	6,500	650
Dumbarton Gold-dredging Company (Ltd.)	11,000	1,800	9,200	920
Dunedin Gold-dredging Company (Ltd.)	8,700	..	8,700	7,540
Dunstan Lead Gold-dredging Company (Ltd.)	14,000	3,000	11,000	7,700
Dunstan Pioneer Gold-dredging Company (Ltd.)	7,000	1,000	6,000	1,800
Earnscleugh No. 3 Dredging and Electric-power Company	25,000	3,500	14,000	9,800
Eclipse Gold-dredging Company (Ltd.)	7,500	1,500	6,000	3,000
Electric Gold-dredging Company (Ltd.)	2,600	..	2,600	2,600
Electric Extended Gold-dredging Company (Ltd.) ..	10,000	2,200	7,800	5,460
Endeavour Gold-dredging Company (Ltd.)	11,000	2,000	8,000	4,000
Enterprise Gold-dredging Company (No liability) ..	3,000	..	3,000	3,000
Ettrick Gold-dredging Company (Ltd.)	4,500 6,500	2,000	2,500 6,500	1,937½
Eureka Gold-dredging Company (Ltd.)	12,000	..	12,000	12,000
Excelsior Gold-dredging Company (Ltd.)	9,000	2,000	7,000	2,800
First Chance Gold-dredging Company (Ltd.)	5,000 6,000	..	5,000 5,500	5,000 500
Fourteen-mile Beach Gold-dredging Company (Ltd.) ..	16,000	..	2,600 5,200 3,500	2,600 3,120 1,750
Fraser Flat Gold-dredging Company (Ltd.)	13,000	3,000	10,000	6,000
Galtee More Dredging Company (Ltd.)	7,000	..	..	7,000
Galvanic Gold-dredging Company (Ltd.)	7,500	1,500	6,000	4,800
Gentle Annie Gold-dredging Company (Ltd.)	8,500	1,600	6,900	2,760
Gibb's Beach Gold-dredging Company (Ltd.)	8,000	1,600	6,400	3,200
Gibbston Gold-dredging Company (Ltd.)	8,000	1,600	6,400	1,280
Gold Deposit Gold-dredging Company (Ltd.)	8,600	1,800	6,800	1,360
Gold King Gold-dredging Company (Ltd.)	10,500	2,500	8,000	800
Gold Queen Gold-dredging Company (Ltd.)	10,000	2,000	7,000	7,000
Golden Banner Gold-dredging Company (Ltd.)	7,600	1,600	5,500	1,650
Golden Beach Hydraulic Elevating and Dredging Co. (Ltd.)	13,000	..	13,000	13,000
Golden Bed Gold-dredging Company (Ltd.)	10,000	2,000	8,000	6,400
Golden Chain Gold-dredging Company (Ltd.)	10,000	2,000	8,000	2,400
Golden Elbow Dredging Company (Ltd.)	9,500	2,000	6,500	1,300
Golden Falls Gold-dredging Company (Ltd.)	5,500	1,000	4,500	2,475
Golden Gate Gold-dredging Company (Ltd.)	2,500	..	2,500	2,500
Golden Gravel Gold-dredging Company (Ltd.)	7,500	1,500	6,000	2,400
Golden Gutter Gold-dredging Company (Ltd.)	9,500	2,000	7,000	700
Golden Horseshoe Dredging Company (Ltd.)	10,000	2,000	8,000	800
Golden Link Gold-dredging Company (Ltd.)	7,000	1,200	5,800	4,640
Golden Molyneaux Gold-dredging Company (Ltd.) ..	8,500	2,000	6,500	650
Golden Point Dredging Company (Ltd.)	6,000	..	6,000	6,000
Golden Reward Gold-dredging Company (Ltd.)	7,500	1,500	6,000	1,800
Golden River Gold-dredging Company (Ltd.)	8,000	1,600	6,400	3,200
Golden Roxburgh Dredging Company (Ltd.)	11,000	2,500	8,500	850
Golden Run Dredging Company (Ltd.)	6,000 5,000	..	6,000 3,000	6,000 2,250
Golden Standard Gold dredging Company (Ltd.)	8,000	1,500	6,500	2,600
Golden Terrace Gold-dredging Company (Ltd.)	5,000	..	5,000	3,750
Golden Treasure Gold-dredging Company (Ltd.)	2,876	..	2,876	2,876
Golden Vein Gold-dredging Company (Ltd.)	7,500	1,600	5,900	1,770
Grand Junction Gold-dredging Company (Ltd.)	8,500	1,600	6,900	690
Great Central Gold-dredging Company (Ltd.)	8,000	2,000	6,500	3,600
Halfway House Dredging Company (Ltd.)	7,000	2,000	5,000	3,500
Hartley and Riley Beach Dredging Company (Ltd.) ..	7,000	..	6,500	6,500
Horseshoe Bend Gold-dredging Company (Ltd.)	8,000	2,000	6,000	600
Island Block Gold-dredging Company (Ltd.)	60,000	..	60,000	..
Junction Electric Gold-dredging Company (Ltd.) ..	26,000	..	26,000	26,000

SCHEDULE I.—TABLE A.—RETURN of DREDGING COMPANIES—*continued.*

Name of Company.	Amount of Nominal Capital.	Amount of Promoters' Shares.	Amount of Contributing Shares.	Amount of Contributing Shares called up.
	£	£	£	£
Kawarau Bridge Gold-dredging Company (Ltd.)	9,000	2,000	5,750	1,437½
Kawarau Consolidated Gold-dredging Company (Ltd.)	7,500	1,900	5,600	2,800
Kelly and Casey Beach Dredging Company (Ltd.)	8,000	2,000	6,000	3,000
Kia Ora Gold-dredging Company (Ltd.)	7,500	1,600	5,900	1,770
Klondike Gold-dredging Company (Ltd.)	6,000	..	6,000	6,000
Last Chance Hydraulic-sluicing, Elevating, and Dredging Company (Ltd.)	12,000	3,300	8,700	5,220
Leaning Rock Gold-dredging Company (Ltd.)	8,500	1,500	7,000	2,800
Lioness Gold dredging Company (Ltd.)	8,250	1,650	6,600	660
Long Valley Gold-dredging Company (Ltd.)	9,000	2,000	7,000	2,800
Magnetic Gold-dredging Company (Ltd.)	7,000	..	7,000	7,000
Main Lead Hercules Dredging Company (Ltd.)	9,500	1,800	7,700	770
Majestic Gold-dredging Company (Ltd.)	6,500	800	5,700	2,850
Manorburn Gold-dredging Company (Ltd.)	3,000	..	3,000	3,000
Manuherikia Gold dredging Company (Ltd.)	12,000	6,000	6,000	2,400
Maori Gold-dredging Company (Ltd.)	5,300	..	5,300	5,300
Matau Gold-dredging Company (Ltd.)	7,000	..	7,000	7,000
Meg and Annie Gold-dredging Company (Ltd.)	7,500	1,500	5,500	550
Metallic Gold-dredging Company (Ltd.)	7,500	1,500	6,000	4,800
Merrimac Gold-dredging Company (Ltd.)	8,000	1,600	6,400	4,480
Miller's Flat Electric Dredging Company (Ltd.)	5,000	1,750	3,250	2,681¼
Moa Flat Dredging Company (Ltd.)	10,000	2,000	8,000	6,400
Molyneux Hydraulic, Elevating, and Gold-mining Company (Ltd.)	10,000	..	5,690 (A) 4,310 (B)	5,690 4,310
Monte Christo Dredging Company (Ltd.)	7,000 1,000	1,100 ..	5,900 1,000	2,950 ..
Morning Star Gold-dredging Company (Ltd.)	5,500	..	5,500	5,500
Morven Ferry Gold-dredging Company (Ltd.)	10,000	2,000	7,000	700
Mount Pisa Gold-dredging Company (Ltd.)	7,500	1,500	6,000	600
Nevis Gold-dredging Company (Ltd.)	4,000	..	3,500	3,500
New Alexandra Gold-dredging Company (Ltd.)	10,000	..	8,500	8,500
Ngapara No. 3 Gold-dredging Company (Ltd.)	7,000	2,000	5,000	1,250
Nil Desperandum Gold-dredging Company (Ltd.)	6,300	..	6,300	6,300
Number Two Matau Gold-dredging Company (Ltd.)	12,000	2,000	10,000	1,000
Old Dunstan Gold-dredging Company (Ltd.)	8,500	2,000	6,500	1,300
Olrig Gold-dredging Company (Ltd.)	7,000	..	7,000	7,000
Otago Gold-dredging Company (Ltd.)	4,500	..	4,000	4,000
Perseverance Gold-dredging Company (Ltd.)	10,000	..	..	..
Pioneer Eureka Gold-dredging Company (Ltd.)	8,000	..	..	..
Prince Albert Gold-dredging Company (Ltd.)	8,000	..	..	..
Prince Arthur Gold-dredging Company (Ltd.)	8,000	2,000	6,000	600
Remarkables Gold-dredging Company (Ltd.)	4,700	800	3,900	1,560
Richard's Beach Gold-dredging Company (Ltd.)	8,000	2,000	6,000	4,200
Riley's Beach Gold-dredging Company (Ltd.)	4,500	..	4,500	4,500
River Molyneux Gold-dredging Company (Ltd.)	11,000	2,000	9,000	2,700
Rolling Stone Gold-dredging Company (Ltd.)	4,000	..	..	..
Roxburgh Jubilee Dredging Company (Ltd.)	12,000	3,500	8,500	1,700
Royal Maori Gold-dredging Company (Ltd.)	8,000	2,000	6,000	2,400
Sailors' Bend Dredging Company (Ltd.)	8,000	1,500	6,500	3,900
Sandy Point Gold-dredging Company (Ltd.)	7,700	..	..	..
Second Magnetic Gold-dredging Company (Ltd.)	9,000	2,500	6,500	5,200
Shepherd's Creek Gold-dredging Company (Ltd.)	5,000	1,500	3,500	1,750
Shotover Gold-dredging Company (Ltd.)	7,000	1,600	5,400	1,890
Sixteen-mile Beach Gold-dredging Company (Ltd.)	8,500	2,000	6,500	2,600
Smith's Creek and Bannockburn Deep Lead Dredging Company (Ltd.)	12,000	2,000	10,000	6,000
Springvale Dredging Company (Ltd.)	4,000	..	4,000	4,000
Tacon's Cardrona Dredging Company (Ltd.)	6,000	1,250	4,750	1,900
Teviot Gold-dredging Company (Ltd.)	10,000	2,000	8,000	800
United Morven Gold-dredging Company (Ltd.)	10,000	2,000	7,000	700
Upper Clutha Gold-dredging Company (Ltd.)	6,500	1,600	4,900	1,470
Upper Fraser Gold-dredging Company (Ltd.)	11,000	1,600	9,400	940
Upper Magnetic Gold-dredging Company (Ltd.)	8,000	1,600	6,400	4,480
Vincent Gold-dredging Company (Ltd.)	5,500	..	5,500	5,500
Vincent Extended Gold-dredging Company (Ltd.)	8,500	1,500	7,000	4,200
Voltaic Prospecting and Dredging Company (Ltd)	5,000	2,500	2,500	500
West Matau Gold-dredging Company (Ltd.)	14,000	2,000	12,000	1,200
White Star Gold-dredging Company (Ltd.)	6,500	1,500	5,000	2,000
Bonanza Gold-dredging Company (Ltd.)	8,000	..	..	..
Golconda Gold-dredging Company (Ltd.)	8,000	..	..	..
Golden Channel Dredging Company (Ltd.)	8,500	..	..	..
Golden Cradle Dredging Company (Ltd.)	10,000	1,700	8,300	830
Golden Glen Dredging Company (Ltd.)	12,000	2,000	9,500	950
Golden Ripple Gold dredging Company (Ltd.)	10,500	1,800	8,200	820
Golden Star Dredging Company (Ltd.)	10,000	2,000	8,000	800
Gunton's Beach Gold-dredging Company (Ltd.)	9,000	..	..	..
Lady Cardrona Dredging Company (Ltd.)	7,000	2,000	5,000	500
Lady Roxburgh Dredging Company (Ltd.)	11,000	2,000	9,000	900
Manorburn Lead Dredging Company (Ltd.)	9,000	1,600	7,400	740
Moke Creek Dredging Company (Ltd.)	7,500	2,000	5,500	550
Rise-and-Shine Dredging Company (Ltd.)	12,000	..	..	..
Roxburgh Lead Gold-dredging Company (Ltd.)	11,000	2,000	9,000	900
Scotia Gold-dredging Company (Ltd.)	7,500	1,550	5,950	595
Vulcan Gold-dredging Company (Ltd.)	8,500	1,700	6,800	680

TABLE B.

Number of companies: 137.
Total amount of nominal capital: £1,452,826.
Total amount of promoters' shares: £215,450
Total amount of contributing shares actually allotted: £985,676.
Total amount of contributing share capital called up: £518,042.

SCHEDULE II.

RETURN showing NUMBER of DREDGING CLAIMS GRANTED for Year ending 31st March, 1900, as compared with other Classes of Claims, together with Gross Areas and Rentals payable during the First Year of the respective Terms.

TABLE A.—Dredging Claims.

Name of Places from which License issued.	Number of Claims.	Gross Acreage.	Gross Rental.
		A. R. P.	£ s. d.
Clyde, Alexandra, Roxburgh	104	5,549 2 19	681 5 0
Cromwell	51	2,258 3 24	282 0 0
Queenstown	19	1,181 0 0	148 7 6
Arrow	34	1,898 0 0	238 10 0
Totals	208	10,887 2 3	1,350 2 6

TABLE B.—Claims not being Dredging Claims.

Names of Places from which License issued.	Number of Claims.	Gross Acreage.	Gross Rentals.
		A. R. P.	£ s. d.
Clyde, Alexandra, Roxburgh	46	543 0 5	78 7 6
Queenstown	45	587 0 0	73 7 6
Arrow	28	399 0 0	49 12 6
Cromwell	65	418 0 28	37 3 6
Totals	184	1,947 0 33	238 11 0

Mr. Warden POYNTON to the UNDER-SECRETARY for MINES, Wellington.

SIR,— 10th April, 1900.

Re the different mining centres in my district, I have the honour to report as follows:—

WYNDHAM.

There is increased activity in this district, owing to the dredging industry. All applications for rights below the bridge at Mataura Township are made in the Wyndham Court. A number of claims and prospecting licenses for the bed of the Mataura River have been granted. The prospects obtained are very good, and dredging on at least one claim will soon be in full operation. If found to be payable other dredges will be put on, and the whole river-bed to the sea will be taken up.

OREPUKI.

There is nothing fresh to report in this district. The Shale Company's works are of great extent, and large sums of money have been expended in plant and necessary work. Up to the present there has been no output of oil, owing to the extensive preparations that are necessary, but the opinions of experts are highly favourable as to the prospects of the industry. If the venture proves a success it will be of great importance to the whole of Southland.

WAIAU AND WEST WAIAU.

Dredging on the Waiau has not been the success that was anticipated. The suction-dredge erected on one of the claims is now being altered to a bucket-dredge. The shareholders are still confident of ultimate success. Nothing is being done on any of the other claims. West of the Waiau mining is still stagnant, no discoveries having been made during the last twelve months. The increased attention now given to dredging will divert prospecting from unexplored country like this, and be likely for some time at least to prevent fresh discoveries.

ROUND HILL.

Hydraulic elevating is still in full operation in this district. Several new claims have been taken up, and, if water can be obtained in sufficient quantity, will, without doubt, pay well. In a

former report I stated that the ground between Round Hill and the sea-beach would probably be worked at some future time. Several dredging-claims have now been taken up on this area. A dredge has been built on one, and the ground will soon be tested.

PRESERVATION INLET.

Three quartz-claims have been at work during the year, but the results have been unsatisfactory.

Alluvial gold is still being got, but in small quantities only.

I have, &c.,

The Under-Secretary, Mines Department, Wellington. J. W. POYNTON, Warden.

WATER-RACES.

WAIMEA-KUMARA WATER-RACES.

Mr. ALEXANDER AITKEN, Manager, Waimea-Kumara Water-races, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,— Kumara, 12th April, 1900.

I have the honour to forward the following report on the Waimea-Kumara Water-races for the year ended the 31st March, 1900:—

WAIMEA RACE.

The total sales of water from this race for the year ended the 31st March, 1900, amounted to £622 13s. 7d., and the expenditure for maintenance and repairs during the same period was £857 10s. 9d., showing a debit balance of £234 17s. 2d. on the year's transactions.

The average number of miners supplied from the race during the year with water for sluicing was 36·58, and the approximate quantity of gold obtained by them was 1,917 oz., the value of which was £7,476 6s.

The sales of water are £72 2s. 6d. less than during the preceding year, and the amount of gold obtained was 205 oz. less, having a value of £799 10s.

The sales of water and yield of gold show a considerable falling-off, and this can only be attributed to the increasing poverty of the ground worked during the year, as the supply of water was good and continuous, and very few stoppages occurred during the period.

On an alluvial field like Waimea a gradual decline in the yield of gold must, after a certain lapse of time, take place, unless new ground is opened up or improved methods of working adopted. It is now thirty-five years since the field was opened, and during the whole of that time it has been a continuous gold-producer. All the best ground was worked out first, and the ground still unworked (except the Middle Branch Flat) is exceedingly poor. The only large area of unworked ground likely to prove good in the district is the flat in the middle branch of the Waimea Creek, which will be worked into the Waimea Main Tail-race.

Very few breaks in the races occurred during the year, and these were immediately repaired.

Since the deviation of the Waimea Race at Kawhaka no stoppages or accidents have occurred in that portion of the race.

The water from the Wainihinihi Race has to some extent assisted in keeping up the supply for Waimea.

The expenditure on maintenance and repairs was £15 12s. 7d. greater than during the preceding year. This expenditure includes not only ordinary maintenance and repairs, but also the cost of renewing a portion of the original fluming at Kawhaka, which was in such a bad state of decay that it had to be replaced by an entirely new flume. The cost of this work added considerably to the expenditure for maintenance and repairs.

Besides the sales of water above referred to, water to the extent of £110 was given to parties who could not afford to pay for the whole amount of water supplied on account of the poverty of the ground sluiced by them. Full inquiries were made in each case, and had such concessions not been made the parties would have had to abandon their claims and leave the district, or add to the number of the unemployed.

A considerable quantity of waste water was given to parties prospecting new ground commanded by the race, but this was only given after all paying parties had been fully supplied, and was principally given during wet weather, when there was plenty of water to spare.

A considerable number of men are still employed in the back gullies and in other localities not commanded by the race-water. They depend entirely on dams and races constructed by themselves, and the year just past has been a favourable one for them, as the supply of water has been fairly good.

The following statement will show the receipts and cost of maintenance of the Waimea Race for the year ended 31st March last, together with the approximate quantity of gold obtained by those using water for working claims from that supply:—

Month.	Sales of Water.	Cash received for Sales of Water.	Expenditure.	Outstanding Moneys at the End of each Month.	Number of Men employed.	Approximate Quantity of Gold obtained.	Value of Gold obtained.
1899.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		Oz.	£ s. d.
April	49 11 8	51 15 0	40 9 2	23 1 5	41	150	585 0 0
May	68 6 8	67 12 0	59 16 8	23 0 8	43	211	822 18 0
June	55 15 10	54 12 0	53 19 2	25 11 2	41	169	659 2 0
July	64 3 10	63 0 6	53 9 2	25 11 2	40	198	772 4 0
August	55 10 5	54 5 0	59 11 8	25 11 2	37	171	666 18 0
September	59 15 10	54 13 9	57 8 2	25 19 6	40	180	702 0 0
October	57 13 1	54 19 9	66 14 2	34 11 2	38	177	690 6 0
November	51 9 2	63 5 9	103 9 2	26 9 4	34	159	620 2 0
December	34 18 1	31 9 6	91 16 8	25 12 1	33	109	425 2 0
1900.							
January	36 5 5	37 7 6	148 13 11	28 6 1	31	113	440 14 0
February	41 11 6	32 15 0	61 1 8	31 18 8	29	131	510 18 0
March	47 12 1	59 5 0	61 1 2	25 3 8	32	149	581 2 0
Totals	622 13 7	625 0 9	857 10 9	..	36·58 (average)	1,917	7,476 6 0

Races and Dam, Middle Branch.

A race from the Callaghan's branch race to the dam in the middle branch of the Waimea Creek has been constructed capable of carrying thirty-five sluice-heads of water. This race is 27 chains in length, and is so constructed as to render available the dam-site in Greek's Gully, for which a right has been obtained, should at any time more storage-room for water be required.

An embankment 10 chains in length has been constructed in the middle branch of the Waimea Creek, and the dam thus formed is now available for the storage of water for the use of the claims that will sluice into the Waimea Main Tail-race.

An accident happened to this dam during very wet weather on the 8th March, by which a portion of the embankment was carried away, but repairs are now nearly completed, and the embankment will be secured against any future damage by floods.

The gates for regulating the supply of water from this dam have been constructed so that the embankment can be raised to a further height of 6 ft. The embankment when raised to this extent will make the dam hold a large quantity of water, and the probability is that the second dam in Greek's Gully will not be necessary for some time to come. The construction of a second dam would, however, greatly increase the storage-room for water, and advantage could be taken of the local supply in wet weather to supplement the supply from the races, and would hold water that would otherwise go to waste.

From the dam in the middle branch a race 53 chains in length, capable of carrying thirty-five sluice-heads of water, has been constructed to a point opposite the centre of the claims taken up in the Middle Branch Flat. The claims will be supplied with water for sluicing from the end of this race, or from such other points as will be most convenient. If water is laid on to the claims by pipes direct from the race, the available pressure will be from 70 ft. to 90 ft., according to the locality of the claims. High pressure is not necessary for the claims in the Middle Branch Flat, as the faces will be low and the material easily broken down, but large quantities of water will be necessary, as the gradient of the Waimea Main Tail-race is very low, being only 3 in. per box of 12 ft.

Waimea Main Tail-race.

This main tail-race is now completed, and parties can at once start to construct their private tail-races and connect with the main tail-race.

The upper portion of the main tail-race has been securely timbered. A shaft 8 ft. in length by 3 ft. in width and 40 ft. in depth, in three compartments, has been constructed. One compartment has an efficient ladder-way, one is for lowering material for repairs, and the other is for supplying flush water at the head of the main tail-race. A chamber 16 ft. in length, 4 ft. 6 in. in width, and 6 ft. high has been excavated to store blocks and timber for repairs. A foot-way to enable the man in charge of the main tail-race to get up and down should a blockage occur while sluicing is carried on has also been constructed throughout the whole length of the work.

Branch Race to Callaghan's.

The total sales of water from this race during the year was £240, and the expenditure for maintenance and repairs during the same period was £140 8s. 8d., leaving a credit balance of £99 11s. 4d.

The average number of miners supplied with water from this race was eleven, and the approximate quantity of gold obtained by them was 492 oz., having a value of £1,918 16s.

The sales of water are £48 7s. 6d. greater than the preceding year, and the approximate quantity of gold obtained was 1 oz. more, having a value of £3 18s.

The expenditure on maintenance and repairs was £23 3s. 10d. less than during the preceding year. Any increase in the sales of water would not increase the expenditure on maintenance and repairs.

No new payable ground has been opened up in the vicinity of this race during the year.

The ground sluiced during the year has been poor, and has not turned out as expected, but there is still a very large area of ground unprospected.

The ground held by Menzoni and party still yields fair returns. This claim, which has been continuously and profitably worked during the last thirty-five years with water from private races

and dams, is now making preparation to use water from the Callaghan's Branch Race, as their own supply is inadequate.

A quantity of waste water was given to parties engaged in prospecting, principally during wet weather, and only after all paying parties had been fully supplied.

The following statement shows the revenue derived from sales of water, and also the cost of maintenance, in the Callaghan's branch race for the year ended the 31st March, 1900:—

Month.	Sales of Water.	Cash received for Sales of Water.	Expenditure.	Outstanding Moneys at the End of each Month.	Number of Men employed.	Approximate Quantity of Gold obtained.	Value of Gold obtained.
1899.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		Oz.	£ s. d.
April	26 15 0	26 15 0	10 0 0	..	14	53	206 14 0
May	36 0 0	43 15 0	10 0 0	..	14	70	273 0 0
June	7 15 0	..	10 0 0	..	10	16	62 8 0
July	27 10 0	33 15 0	10 0 0	..	10	54	210 12 0
August	6 5 0	..	10 0 0	..	10	18	70 4 0
September	39 15 0	39 15 0	10 10 0	..	16	75	292 10 0
October	..	..	10 0 0	..	..	..	..
November	24 10 0	24 10 0	20 0 0	..	14	54	210 12 0
December	26 10 0	26 10 0	12 10 0	..	14	57	222 6 0
1900.							
January	7 10 0	7 10 0	10 0 0	..	12	18	70 4 0
February	..	..	10 0 0	..	..	..	..
March	37 10 0	..	17 8 8	37 10 0	16	77	300 6 0
Totals	240 0 0	202 10 0	140 8 8	..	11 (average)	492	1,918 16 0

Kumara Water-race.

The sales of water from Kumara Race for the year amounted to £2,458 15s. 8d., and the expenditure for maintenance and repairs during the same period was £1,904 7s. 9d., showing a credit balance of £554 7s. 11d.

The average number of miners supplied with water from this race during the year was 69·66, and the approximate quantity of gold obtained by them was 4,439 oz., having a value of £17,312 2s. The sales of water are £252 18s. 9d. less than during the preceding year, and the yield of gold is less by 232 oz., having a value of £904 16s. The decrease in the sales of water and the amount of gold obtained can only be accounted for by the increasing poverty of the ground sluiced during the year, and the abandonment of several claims on account of their non-payable character.

The expenditure on maintenance and repairs during the year, although still large, is £269 16s. 2d. less than during the preceding year.

A large portion of the head-race tunnel had to be retimbered, at a cost of about £480, as it was in a very bad and unsafe condition. This tunnel has always been expensive to maintain owing to the manner in which it was originally constructed. The whole of the bad portion of the tunnel has now been retimbered, with the exception of thirty-three sets, or 132 ft., near the head. During the year 195 sets of new timber were put in, and a total length of 780 ft. entirely renewed, the whole being substantially slabbed at the back of the sets and lined with planking on the inside.

A track about 50 chains in length was constructed from the siphon that supplies No. 4 channel to the siphon that supplies No. 5 channel. This track was necessary to enable one ganger to attend to both siphons. The Kapitea Hill Race was made deeper and enlarged, and the timbered portions were lined, to make the race carry a larger quantity of water, as its capacity was not enough to carry water for two channels at the same time.

In retimbering the head-race tunnel it has been made higher by about 2 ft. than it was formerly, and will now carry a hundred and fifty sluice-heads if necessary without the water touching the roof.

There is no doubt that the best of the ground in Kumara, so far as at present known, has been worked, but there are still large areas of ground unworked that will yet be sluiced for small wages, and extensive sluicing operations will be carried on in Kumara for many years to come. The methods of sluicing are being constantly improved, larger supply-pipes are being used, the width of sluice-boxes is being increased, and larger quantities of wash are being sent away, with the result that more gold is saved and blockages in tail-races and channels are now not so frequent as formerly.

Besides the sales of water above referred to, water to the value of £549 14s. at ordinary rates was supplied to claims having a succession of poor washings. In all cases where water was given to claims having a succession of poor washings full inquiries were made as to the necessity for so doing, and the claims would have been abandoned if such assistance had not been given. In wet weather, when water was plentiful and running to waste down the creeks, extra water was supplied to claims using race-water, and water was also supplied for prospecting.

Large quantities of water were also supplied free for flushing the channels. The quantities authorised to be supplied for flushing channels are: No. 2 channel, ten sluice-heads; No. 3 channel, twenty-three sluice-heads; No. 4 channel, ten sluice-heads; and No. 5 channel, twenty sluice-heads. The quantity actually supplied was in excess of those quantities.

For six working-days during the year the dams were empty, and for fifteen days water was short; but upon the whole the supply was good, and there was plenty of dead-work to do in the claims when water was not available. If the Loop-line Dam had not been raised, thus increasing

the storage-capacity by 30,000,000 cubic feet of water, and the catch-water race for carrying water from the watershed of the lower dam into the Loop-line Dam had not been constructed, the dams would have been empty for thirty or forty days during the year. Besides the time during which water was short, the whole of the miners on the field observed nineteen holidays during the year. For sixty-two days water was going to waste over the dams, and during that time 120½ days' water was lost, as the storage-room was not sufficient to retain it.

Contracts have recently been entered into for the supply of timber and stores, and the prices at which these will now be supplied will materially reduce the cost of maintenance and repairs.

The table attached shows the number of days in each month on which water was running over the dams and quantity lost, the number of holidays observed, the number of days when there was no water for channels, and the days on which the dams were empty.

NUMBER of DAYS WATER was LOST for the Year ending the 31st March, 1900.

Date.	Water running over Dam.	Quantity of Water lost.	Holidays.	No Water for Channel.	Dams empty.
1899.	Days.	Days.	Days.	Days.	Days.
April	2	3	3	...	...
May	4	8	...	...	...
June	...	...	...	3	2
July	3	3	...	3	...
August...	...	...	...	..	1
September	4	3	...	9	3
October	10	24	...	...	...
November	9	8	...	...	...
December	18	52	9	...	...
1900.					
January	8	14	7	...	...
February	1	0½	...	...	...
March	3	5	...	...	...
Totals	62	120½	19	15	6

The following statement shows the revenue derived from sales of water, and also the cost of maintenance, for the year ended the 31st March, 1900:—

Month.	Sales of Water.	Cash received for Sales of Water.	Expenditure.	Outstanding Moneys at the End of each Month.	Number of Men employed.	Approximate Quantity of Gold obtained.	Value of Gold obtained.
1899.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		Oz.	£ s. d.
April	227 5 6	324 18 10	141 10 6	291 15 6	63	410	1,599 0 0
May	312 9 1	278 10 0	142 2 8	313 9 7	64	548	2,137 4 0
June	251 19 9	234 12 6	151 10 11	332 13 1	62	447	1,743 6 0
July	244 19 2	248 11 2	134 4 3	327 4 11	70	435	1,696 10 0
August	196 14 3	149 10 0	119 9 2	374 9 1	63	355	1,384 10 0
September	157 7 1	265 15 0	153 1 7	266 1 1	61	320	1,248 0 0
October	218 13 4	164 0 0	153 12 4	320 14 6	57	396	1,544 8 0
November	129 12 10	228 0 0	142 15 2	240 14 4	68	235	916 10 0
December	177 13 11	67 0 0	230 11 0	333 1 3	71	321	1,251 18 0
1900.							
January	122 1 4	176 0 0	181 1 6	279 2 7	71	222	865 16 0
February	193 0 2	167 15 0	188 4 2	304 7 9	93	345	1,345 10 0
March	226 19 3	66 0 0	166 4 6	465 7 0	93	405	1,579 10 0
Totals	2,458 15 8	2,370 12 6	1,904 7 9	..	69·66 (average)	4,439	17,312 2 0

No. 5 Main Tail-race.

Four parties have driven private tail-races from the main tail-race to their claims, and are now engaged in sluicing, but none of them are yet fully opened up, nor have they reached the bottom on which the best layer of gold-bearing wash rests, so that the payable or non-payable character of the claims is not yet ascertained. The claims now engaged in sluicing are Burger and party, Morgan and party, Thomson and party, and Morn and party.

G. Brown and party have driven their private tail-race, and erected a water-wheel for stacking the large stones, and will at once start sluicing.

D. Brown and party are engaged in driving their private tail-race, but, as this private tail-race is about 25 chains in length, it will be some time before they start sluicing operations.

A line of wrought-iron pipes, 26 in. in diameter and about 2,440 ft. in length, has been laid from the Kapitea Hill Race to a central position among the claims, which is capable of supplying three claims with ten sluice-heads of water each under an effective pressure of 73 ft. of water, *plus* the depth of the ground.

While the parties holding claims at No. 5 channel were driving their private tail-races water was supplied from the race to keep the channel clear of the material trucked out. Water has also

been supplied for opening out with, as opening out new claims is a difficult and expensive work. Each claim had to open out separately, and the cost to each party would not be less than £175.

As the workings at No. 5 channel are extended to the south-west the water-supply for Pearn's Brewery will be prejudicially affected. The brewery is an extensive one, but the owner is willing to place no obstacle in the way of working if a pipe 1½ in. in diameter is laid on from the No. 5 pipe-line. The cost would be about £35.

Kumara Deep Level.

With the exception of the expenditure of about £15 for repairs and timbering a small portion of the Deep Level Drainage-tunnel, no work has been done by the Deep Level Company during the year.

As the old shaft was in bad condition and beyond repair, the Mines Department in May last authorised a further expenditure of £450 for sinking a new shaft, excavating and timbering a suitable chamber, and driving a further distance of 300 ft. Of the above amount the department was to pay two-thirds, and the company one-third. The work was to be publicly tendered for under approved specifications, and the company was to show that it was in a position to pay its share of the cost. This offer has not been taken advantage of by the company.

The tunnel has been driven a total distance of about 1,600 ft., and it drains a large portion of the field to the main bottom. The facilities afforded by this tunnel for prospecting the deep levels of Kumara have not been taken advantage of to anything like the extent that should have been the case. With the exception of the tunnel itself and one or two rises, in some of which encouraging prospects were obtained, the ground in the vicinity of the tunnel is still unprospected.

Much more prospecting has been done in the Kumara deep levels by private parties working from the face of the terrace fronting the Teremakau River. The levels on which these parties are working are about 130 ft. lower than the bottoms hitherto worked in Kumara, and about 25 ft. higher than the Deep-level Tunnel. Two of the parties have been assisted in driving their tunnels by small subsidies from the department, but the greater portion of the work has been done without subsidy. One of the parties is now making fair wages, and the work now being carried on will in all probability lead to further developments as the tunnels are driven further into the terrace.

Wainihinihi Water-race.

In the construction of this race unforeseen difficulties were met with in carrying the race round the high rock siding between the Little Wainihinihi and the head. The tunnels turned out very hard, and in many places the rock, although hard, was very much broken and required heavy timbering. The total length of the tunnels was 19¼ chains, or 1,273 ft. They are now all through, but boxing will probably be required where the rock was broken to make them carry water efficiently. The ditching round the rock siding, about 11 chains in length, had to be timbered and covered, as the ground would not stand without, and a large portion of it will require to be boxed, as it will not carry water unless this is done. The cost of the work turned out much greater than anticipated, and this was largely due to the difficulty of getting men accustomed to and experienced in rock-work. The miners of Kumara have had little or no experience in this kind of work.

The following statement will show the revenue and expenditure on the whole of the works of the Waimea–Kumara Race for the year ending the 31st March last:—

Month.	Sales of Water.	Cash received for Sales of Water.	Expenditure.	Outstanding Moneys at the End of each Month.	Number of Men employed.	Approximate Quantity of Gold obtained.	Value of Gold obtained.
1899.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		Oz.	£ s. d.
April	303 12 2	403 8 10	191 19 8	314 16 11	118	613	2,390 14 0
May	416 15 9	389 17 0	211 19 4	336 10 3	121	829	3,233 2 0
June	315 10 7	289 4 6	215 10 1	358 4 3	113	632	2,464 16 0
July	336 13 0	345 6 8	197 13 5	352 16 1	120	687	2,679 6 0
August	258 9 8	203 15 0	189 0 10	400 0 3	110	544	2,121 12 0
September	256 17 11	360 3 9	220 19 9	292 0 7	117	575	2,242 10 0
October	276 6 5	218 19 9	230 6 6	355 5 8	95	573	2,234 14 0
November	205 12 0	315 15 9	266 4 4	267 3 8	116	448	1,747 4 0
December	239 2 0	124 19 6	334 17 8	358 13 4	118	487	1,899 6 0
1900.							
January	165 16 9	220 17 6	339 15 5	307 8 8	114	353	1,376 14 0
February	234 11 8	200 10 0	259 5 10	336 6 5	122	476	1,856 8 0
March	312 1 4	125 5 0	244 14 4	528 0 8	141	631	2,460 18 0
Totals	3,321 9 3	3,198 3 3	2,902 7 2	..	117·08 (average)	6,848	26,707 4 0

Kelly's Terrace Drainage-tunnel.

The total length driven of this tunnel is now 4,768 ft., leaving a further distance of 1,232 ft. still to be driven before the ground proposed to be drained has been reached. A shaft (No. 2) 10 ft. by 3½ ft., and 94 ft. in depth, was sunk, as the bad air rendered it impossible to continue driving from No. 1 shaft, and the distance the stuff had to be trucked (1,100 ft.) was getting too great. The total length driven during the year was 1,168 ft. The main bottom (blue reef) was touched about a chain from the present face, and it is gradually rising, and is now about 2 ft. in the reef. It was anticipated that gold in payable quantities would be got when the main bottom was reached, but such is not the case. Only colours have been got, and there is nothing yet to indicate the occurrence of payable gold in the country already passed through. The contractors

for the work have recently sued the trustees of this tunnel for work done, and the matter is still unsettled. The correct levels have not been kept by the contractors in the latter portion of the work done by them, and I refused to certify to the work because it was not done in accordance with the specification.

Another shaft will have to be put down a short distance beyond the present face, as it will soon be too far to truck the stuff, and the air is now getting bad. Authority has been given by the Mines Department for another shaft, but, owing to the dispute between the contractors and the trustees, no action has been taken in the matter.

GENERAL.

A very large number of special claims and prospecting areas have recently been granted in this district as dredging claims, and a still larger number are being applied for. That considerable areas of ground on the coast will pay for dredging is doubtless correct, but at the same time it is certain that a large number of the areas taken up will never have dredges at work on them, and many of those that do will be failures.

Companies have been floated to work ground that is totally unprospected and of unknown depth, and the promoters intend making a rise on the scrip market, and not from gold obtained from the ground. The splendid returns from dredging in Otago, and the ready manner in which scrip is disposed of all over the colony, is the cause of the present boom in dredging on the coast, and persons putting money into dredging as an investment would do well to be cautious.

I have, &c.,

ALEXANDER AITKEN, Manager, Water-races.

The Under-Secretary, Mines Department, Wellington.

[For table showing the result of working the Kumara Water-race for seventeen years, see page 158A.]

MOUNT IDA WATER-RACE.

Mr. R. MURRAY, Manager, Mount Ida Water-race, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,— Naseby, 19th April, 1900.

I have the honour to submit the following report on the Mount Ida and Blackstone Hill Water-races for the year ending the 31st March, 1900:—

Mount Ida Water-race.

The total sales of water from this race during the year amounted to £1,870 15s. 6d., and the expenditure on maintenance and repairs for the same period £1,325 12s. 2d. The total cash received was £1,896 1s. 7d., leaving a balance in favour of the race of £570 9s. 5d.; probably a half of this amount should be placed the supplemented supply from the reservoir. On account of payment in advance free water to the value of £18 17s. 3d. was supplied. Free water to the value of £16 12s. 9d. was supplied to assist in opening up new claims, and free water for washing up was also supplied to the value of £161 6s. 1d. The total value of water supplied from this race during the year was £2,067 11s. 7d. The average number of mines supplied with water was 49·75, about the same number as last year. The approximate quantity of gold obtained by parties using water from this race was 3,392 oz., valued at £13,059 4s. From the 1st April to the 7th July the water-supply was sufficient to keep the miners supplied during the daytime.

The winter set in very early. It commenced to snow on the range on the 23rd May, continuing to the 26th, when frosty weather set in. During this period a small break occurred in Store Gully. On the 7th July it began to snow at noon so heavily that by half-past 2 next morning it completely choked off the water in the race. During this short period fully 10 in. of snow fell—the heaviest one fall in so short a time since 1895. From this date to the end of August all mining operations were at a standstill. The old hands say that the frost was the hardest they ever experienced here—27° on the night of the 24th July. On the 11th August, on an exposed dam, I bored through the ice in two different places and found a thickness of 9½ in. of ice. I started to clean out the race on the 4th September. Got all the strength at the reservoir until they were able to make a start there. Had the water from the East Eweburn and reservoir on on the 12th. After having got as far as Long Gully by the 24th (34-mile peg) it began to snow again, fully 1 ft. falling. The men had to be knocked off, and no further cleaning could be done until the 3rd October, and finished on the 5th November.

The retimbering (twenty-three sets) of a portion of the tunnel at the East Eweburn was done during the winter by the maintenance men. This tunnel is now fairly secured, and should give no trouble for a good many years. The greater portion of the flume crossing Main Gully was strengthened, and sole-plates put under several of the legs. With the exception of two small breaks in Store Gully, and two about a mile above Pearce's Gorge Creek, the race has been kept in fair working-order by the maintenance men. The quantity stored in the reservoir kept up the supply during the period of the breaks.

The water in the reservoir supplementing the race-water having run down on the 6th March, I had the water in the race turned off, and started to widen the race from the reservoir to Coal-pit Dam, giving it a thorough cleaning and repairing from Home Gully to Coal-pit, a distance of five miles and a half. About half of the length of the West Eweburn sideing and Butcher Gully, where almost all the sod-work has to be done, was finished by the end of the month. The water was off two days at Christmas, and during the Naseby races in February.

There were nine elevating claims (the same number as last year) supplied with water.

SUMMARY showing the RESULT of WORKING the KUMARA WATER-RACE for Seventeen Years, from 1st April, 1883, to 31st March, 1900.

Water supplied.	Year.	Rate per Sluice-head per Week.	April.	May.	June.	July.	August.	September.	October.	November.	December.	January.	February.	March.	Total Value of Water sold.	Total Value Free for Assistance.	Total Value Free for Deviations.	Total for Construction of No. 3 Channel.	Total Value Water supplied.	Average Number of Sluice-heads supplied Daily.	Expenditure.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£ s. d.
Water sold ..	1883-84	3 0 0	371 16 5	465 2 1	700 2 6	583 9 7	702 7 6	526 16 3	808 10 5	777 3 9	774 17 11	698 2 6	1,064 0 0	774 6 0	8,346 14 11	..	..	..	..		..
Free ..	1883-84	..	46 2 6	44 5 0	183 11 8	108 19 2	108 0 0	85 7 6	244 7 6	172 18 9	63 12 6	103 9 2	86 5 0	139 3 4	..	1,386 2 1	..	..	..		..
			417 18 11	509 7 1	883 14 2	692 8 9	810 7 6	712 3 9	1,052 17 11	950 2 6	838 10 5	801 11 8	1,150 5 0	913 9 4	..	..	..	..	9,732 17 0	46·35	2,153 5 5
Water sold ..	1884-85	3 0 0	580 4 4	937 19 4	667 3 11	906 16 10	882 6 10	997 1 5	919 12 3	1,126 11 10	819 17 3	289 4 2	756 9 2	821 0 10	9,704 8 2	..	..	..	..		..
Free	1884-85	..	92 5 0	56 19 7	78 18 9	55 13 9	149 0 10	18 11 3	145 13 4	69 3 9	39 15 0	26 12 6	45 3 9	2 16 8	..	780 14 2	..	..	..		..
			672 9 4	994 18 11	746 2 8	962 10 7	1,031 7 8	1,015 12 8	1,065 5 7	1,195 15 7	859 12 3	315 16 8	801 12 11	823 17 6	..	..	..	..	10,485 2 4	49·92	1,656 0 1
Water sold ..	1885-86	2 10 0	665 16 0	796 6 9	893 5 3	745 19 7	773 19 10	943 13 5	953 15 6	997 7 8	697 13 5	686 4 0	708 15 8	935 19 7	9,788 16 8	..	..	..	..		..
Free	1885-86	..	24 13 9	9 2 0	..	..	23 15 0	31 3 4	22 1 3	18 11 10	18 7 2	49 1 4	1 5 0	13 2 6	..	221 3 2	..	..	..		..
			690 9 9	805 8 9	893 5 3	745 19 7	797 14 10	974 16 9	975 16 9	1,015 19 6	716 0 7	735 5 4	710 0 8	949 2 1	..	..	..	..	10,009 19 10	57·20	1,454 19 5
Water sold ..	1886-87	2 10 0	758 0 4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
Water sold ..	1886-87	2 0 0	..	19 10 8	488 3 9	315 7 11	599 5 0	643 7 11	682 8 9	686 7 5	562 0 10	345 12 7	673 0 0	747 9 2	6,470 14 4	..	..	..	..		..
Free	1886-87	..	..	776 0 11	242 0 11	40 13 9	120 9 7	83 15 10	74 5 0	45 9 2	32 15 0	46 8 9	49 16 8	36 3 4	..	1,547 18 11	..	..	..		..
			758 0 4	795 11 7	730 4 8	356 1 8	719 14 7	727 3 9	706 13 9	731 16 7	594 15 10	392 1 4	722 16 8	783 12 6	..	..	..	..	8,018 13 3	56·19	1,398 18 10
Water sold ..	1887-88	2 0 0	535 5 10	679 7 8	167 10 10	656 4 7	684 16 1	694 5 0	591 12 1	710 0 0	535 10 10	519 15 5	670 17 6	734 4 5	7,169 10 3	..	..	..	..		..
Free	1887-88	..	26 11 8	40 19 2	15 13 9	23 10 0	47 7 11	4 11 8	34 16 8	42 10 0	27 10 0	28 6 8	19 11 8	15 17 3	..	347 6 5	..	..	..		..
			561 17 6	720 6 10	183 4 7	679 14 7	732 4 0	698 16 8	626 8 9	752 10 0	553 0 10	548 2 1	690 9 2	750 1 8	..	..	..	..	7,516 16 8	53·68	982 12 0
Water sold ..	1888-89	2 0 0	490 6 8	338 7 7	532 1 1	626 19 10	667 8 3	542 8 4	702 12 6	664 1 7	395 12 3	465 2 1	623 18 4	667 8 4	6,716 6 10	..	..	..	..		..
Free	1888-89	..	107 17 3	90 18 0	87 1 4	75 1 10	32 10 0	16 9 5	38 1 4	13 0 0	34 9 2	58 6 8	90 10 10	74 13 4	..	492 0 0	227 0 0	..	..		..
			598 3 11	429 5 7	619 2 5	702 1 8	699 18 3	558 17 9	740 13 10	667 1 7	430 1 5	523 9 7	714 9 2	742 1 8	..	..	..	..	7,435 6 10	53·10	1,024 1 9
Water sold ..	1889-90	2 0 0	401 13 4	495 16 4	256 16 8	377 16 3	353 4 2	237 7 11	318 10 10	293 8 4	159 18 9	219 15 10	248 19 7	186 16 8	3,550 4 8	..	..	..	..		..
Free	1889-90	..	45 15 0	55 3 4	43 0 0	92 15 0	105 15 0	93 1 8	41 10 0	103 18 4	105 13 4	48 17 6	54 8 4	71 5 0	..	396 2 6	465 0 0	..	..		..
Free, No. 3 Channel	1889-90	..	..	..	..	..	122 19 1	335 1 3	330 11 8	275 8 0	97 13 4	6 0 0	221 18 1	102 11 5	..	..	..	1,492 2 10	..		..
			447 8 4	550 19 8	299 16 8	470 11 3	581 18 3	665 10 10	690 12 6	672 14 8	363 5 5	274 13 4	525 6 0	360 13 1	..	..	..	..	5,903 10 0	42·16	1,424 13 3
Water sold ..	1890-91	2 0 0	300 12 6	355 11 11	368 3 2	423 9 0	622 17 11	666 7 1	720 16 1	701 5 10	578 1 8	546 17 11	691 17 11	689 11 8	6,665 12 8	..	..	..	..		..
Free	1890-91	..	113 5 0	119 14 2	70 7 11	71 17 6	82 9 7	110 16 8	93 13 9	106 0 10	57 5 5	113 6 8	133 2 6	130 5 10	..	409 5 5	793 0 5	..	..		..
Free, No. 3 Channel	1890-91	..	272 11 11	247 3 6	246 17 10	115 2 11	32 2 2	..	..	..	..	..	..	..	..	..	..	913 18 4	..		..
			686 9 5	722 9 7	685 8 11	610 9 5	737 9 8	777 3 9	814 9 10	807 6 8	635 7 1	660 4 7	825 0 5	819 17 6	..	..	..	..	8,781 16 10	62·72	1,766 4 3
Water sold ..	1891-92	2 0 0	616 5 10	655 4 11	542 9 1	179 11 11	426 16 1	769 15 5	784 13 8	642 4 2	469 10 0	291 3 9	543 7 6	724 8 8	6,645 11 0	..	..	..	..		..
Free	1891-92	..	143 11 5	191 16 8	44 3 6	..	82 16 11	151 14 7	118 10 1	233 1 8	213 11 3	137 0 10	64 11 8	28 9 2	..	996 4 5	413 3 4	..	..		..
			759 17 3	847 1 7	586 12 7	179 11 11	509 13 0	921 10 0	903 3 9	875 5 10	683 1 3	428 4 7	607 19 2	752 17 10	..	..	..	..	8,054 18 9	57·53	1,584 10 11
Water sold ..	1892-93	2 0 0	495 17 1	505 12 11	493 5 10	495 13 6	602 2 8	635 1 3	571 1 8	458 7 1	382 2 1	390 19 2	450 7 6	308 10 0	5,789 0 9	..	..	..	..		..
Free	1892-93	..	44 18 9	80 2 6	72 4 2	61 2 1	43 5 10	38 2 6	44 0 10	66 2 6	157 6 8	94 4 2	77 10 10	64 2 6	..	444 15 8	398 7 8	..	..		..
			540 15 10	585 15 5	565 10 0	556 15 7	645 8 6	673 3 9	615 2 6	524 9 7	539 8 9	485 3 4	527 18 4	372 12 6	..	..	..	..	6,632 4 1	47·35	1,782 11 0
Water sold ..	1893-94	2 0 0	451 16 5	480 13 7	541 11 11	542 9 6	575 10 5	486 9 2	539 8 4	402 11 11	451 5 5	303 0 10	415 5 5	392 1 8	5,582 4 7	..	..	..	..		..
Free	1893-94	..	101 5 2	119 5 7	99 4 6	110 7 1	92 9 10	147 16 2	112 11 0	164 18 5	82 0 4	112 3 10	132 15 10	70 6 10	..	1,306 0 3	39 4 4	..	..		..
			553 1 7	599 19 2	640 16 5	652 16 7	668 0 3	634 5 4	651 19 4	567 10 4	533 5 9	415 4 8	548 1 3	462 8 6	..	..	..	..	927 9 2	49·48	1,917 8 5
Water sold ..	1894-95	2 0 0	477 1 8	437 17 4	501 3 4	482 1 3	513 7 11	413 0 5	213 19 2	375 7 6	428 8 9	298 2 5	198 7 1	308 2 11	4,646 19 9	..	..	..	..		..
Free	1894-95	..	76 11 8	98 12 8	103 1 3	92 17 11	83 5 0	122 17 6	96 4 2	105 6 8	81 11 8	74 14 2	72 17 6	86 12 6	..	1,054 12 8	40 0 0	..	5,741 12 5	41·01	1,976 17 7
			553 13 4	536 10 0	604 4 7	574 19 2	596 12 11	535 17 11	310 3 4	480 14 2	510 0 5	372 16 7	271 4 7	394 15 5	..	..	..	..	..	..	..
Water sold ..	1895-96	2 0 0	277 5 10	379 15 0	349 12 1	322 15 10	345 1 8	354 1 8	351 16 8	336 5 5	331 0 0	315 15 5	336 3 4	406 18 4	4,106 11 3	..	..	..	..		..
Free	1895-96	..	95 3 4	96 1 8	139 19 2	81 16 3	76 19 7	77 10 10	110 9 7	114 12 1	67 3 4	92 8 4	90 18 11	86 16 3	..	1,129 19 4	..	..	5,569 5 7	39·78	1,943 8 7
Free, No. 4 Channel	1895-96	..	..	..	..	..	5 12 6	39 14 2	62 7 6	56 9 2	65 4 7	32 10 0	36 1 3	34 15 10	..	..	..	332 15 0	..		..
			372 9 2	475 16 8	489 11 3	404 12 1	427 13 9	471 6 8	524 13 9	507 6 8	463 7 11	440 13 9	463 3 6	528 10 5	..	..	..	..	..	..	..
Water sold ..	1896-97	{2 0 0 / 1 10 0}	286 13 4	307 0 0	166 9 6	387 13 8	318 10 7	310 7 4	356 16 4	322 8 10	144 13 3	319 1 3	284 1 3	299 1 8	3,502 17 0	..	..	..	..		..
Free	1896-97	..	100 5 0	99 4 10	22 18 2	31 1 10	12 19 4	22 16 10	13 18 4	12 11 3	12 18 9	51 18 9	58 16 2	39 19 9	..	479 9 0	..	..	..		..
Free, No. 4 Channel	1896-97	..	15 0 0	14 16 8	4 0 10	18 0 0	7 0 0	18 0 0	9 0 0	12 0 0	7 0 0	6 0 0	10 0 0	13 0 0	..	..	..	133 17 6	4,116 3 6	40·41	1,786 15 9
			401 18 4	421 1 6	193 8 6	436 15 6	338 9 11	351 4 2	379 14 8	347 0 1	164 12 0	377 0 0	352 17 5	352 1 5	..	..	..	..	..	..	..
Water sold ..	1897-98	..	243 11 2	240 5 1	204 19 1	210 11 1	266 15 6	147 4 8	296 9 10	213 1 9	255 19 11	208 16 2	415 13 9	185 15 3	2,889 3 3	..	..	..	..		..
Free	1897-98	..	29 1 3	39 16 3	18 1 10	29 5 0	29 0 0	51 5 0	49 14 4	52 10 0	38 2 6	29 1 3	..	48 15 0	..	414 12 5	..	..	..		..
Free, No. 4 Channel	1897-98	..	..	..	..	..	..	..	..	..	2 10 0	14 0 0	17 0 0	..	..	33 10 0	..	..	3,337 5 8	..	1,841 0 0
			272 12 5	280 1 4	223 0 11	239 16 1	295 15 6	198 9 8	346 4 2	265 11 9	296 12 5	251 17 5	432 13 9	234 10 3	..	..	..	..	..	..	..
Water sold ..	1898-99	..	160 6 6	194 11 5	171 13 0	226 15 6	224 0 6	251 9 1	202 2 11	233 18 5	258 15 4	196 19 9	320 17 10	270 4 2	2,711 14 5	..	..	..	..		..
Free	1898-99	..	28 15 0	59 1 3	30 7 6	42 3 9	45 13 9	54 7 6	33 15 0	37 10 0	28 8 1	28 2 6	37 10 0	44 1 3	..	469 15 7	..	..	..		..
Free, No. 4 Channel	1898-99	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3,181 10 0	..	2,174 3 11
			189 1 6	253 12 8	202 0 6	268 19 3	269 14 3	305 16 7	235 17 11	271 8 5	287 3 5	225 2 3	358 7 10	314 5 5	..	..	..	..	..	..	..
Water sold ..	1899-1900	1 10 0	227 5 6	312 9 1	251 19 9	244 19 2	196 14 3	157 7 1	218 13 4	129 12 10	177 13 11	122 1 4	193 0 2	226 19 3	2,458 15 8	..	..	..	..		..
Free	1899-1900	..	44 7 6	52 9 0	46 17 5	55 18 9	43 7 7	40 6 3	46 2 6	44 7 6	46 17 6	41 5 0	45 0 0	42 15 0	..	549 14 0	..	..	..		..
Free, No. 5 Channel	1899-1900	..	..	..	..	..	..	..	..	..	..	..	36 11 2	93 14 11	..	..	..	130 6 1	3,138 15 9	43·60	1,904 7 9
			271 13 0	364 18 1	298 17 2	300 17 11	240 1 10	197 13 4	264 15 10	174 0 4	224 11 5	163 6 4	274 11 4	363 9 2	96,745 6 2	12,459 6 0	2,375 15 9	3,002 19 9	114,583 7 8	43·60	28,771 18 11

The following statement will show the revenue derived from sales of water, the cost of maintenance, and the approximate quantity and value of gold obtained by the miners using water from this race for the year ending the 31st March last:—

Date.	Sales of Water.	Cash received.	Maintenance.	Number of Men employed.	Approximate Quantity of Gold obtained.	Value.
1899.	£ s. d.	£ s. d.	£ s. d.		Oz.	£ s. d.
April	147 19 10	149 9 10	83 4 8	57	287	..
May	214 15 1	216 15 1	94 10 8	55	260	..
June	179 8 8	181 8 8	87 14 8	50	269	..
July	44 3 1	45 6 6	82 14 8	37	109	..
August	..	..	85 7 8	..	..	..
September	151 19 1	157 0 1	299 13 11	57	146	..
October	258 5 1	257 7 7	134 14 9	61	482	..
November	232 9 3	244 1 9	94 7 8	64	450	..
December	177 9 3	179 9 3	99 0 8	58	539	..
1900.						..
January	209 18 1	209 18 1	89 7 8	61	363	..
February	195 4 4	196 1 0	83 12 6	52	327	..
March	59 3 9	59 3 9	91 2 8	45	160	..
Totals	1,870 15 6	1,896 1 7	1,325 12 2	49·75 (average)	3,392	13,059 4 0

Blackstone Hill Water-race.

The total sales of water from this race amounted to £93 10s. 1d., and the total cash received to £93 10s. 1d. The total cost of maintenance and repairs was £16 16s. The approximate quantity of gold obtained was 150 oz., valued at £577 10s. The number of miners supplied with water from this race was 7·58. During the month of October I had to strengthen Johnstone's tail-race, the winter frosts fretting away the sides; also cleaned out the branch race from the falls to C, Rose's claim, a distance of about two miles and a half. Slight repairs were done to the main race and to the Hill's Creek branch. As there is a considerable side-growth forming on the main race since last cleaned out, it will require a cleaning out next summer when the water gets low.

The following statement shows the revenue derived from sales of water, and also the cost of maintenance, for the year ended the 31st March last:—

Month.	Sales of Water.	Cash received.	Maintenance.	Number of Men employed.	Approximate Quantity of Gold obtained.	Value.
1899.	£ s. d.	£ s. d.	£ s. d.		Oz.	£ s. d.
April	10 15 10	10 15 10	3 0 0	9	..	..
May	10 15 10	6 12 6	0 11 0	9	..	..
June	5 12 6	9 15 10	0 3 0	6	..	..
July	5 12 6	5 12 6	..	6	..	..
August	..	..	0 3 0	7	..	..
September	5 12 6	5 12 6	2 19 0	6	..	..
October	7 4 2	4 18 6	6 4 0	8	..	..
November	9 15 10	12 1 6	0 3 0	8	..	..
December	9 15 10	9 15 10	0 3 0	8	..	..
1900.						
January	9 10 10	9 10 10	2 3 0	8	..	..
February	9 15 10	9 15 10	0 3 0	8	..	..
March	8 18 5	8 18 5	1 4 0	8	..	..
Totals	93 10 1	93 10 1	16 16 0	7·58	150	577 10 0

I have, &c.,

The Under-Secretary for Mines, Wellington. R. Murray, Manager.

WATER CONSERVATION.

Mr. T. Perham, A.M.I.C.E., to the Under-Secretary for Mines, Wellington.

Sir,— Mines Department, Wellington, 6th June, 1900.

I have the honour to submit my third annual report, for the year ending the 31st March, 1900, accompanied by an illustrative drawing.

North Island.

The Ohinemuri County Council having applied for pound-for-pound subsidies on some temporary schemes for domestic water-supplies completed by their own engineer at Waitekauri, Karangahake, and Waihi, an inspection was made and the subsidies recommended, subject to necessary amendments and modifications, in the cases of Waitekauri and Karangahake, but not for Waihi, on account of the headworks not being at a sufficient elevation for purposes of fire-extinction, or the water pure enough for domestic purposes. Since then an application has been made by the same Council to set aside as a waterworks reserve 215 acres on the Mangatoetoe Creek, lower down than that recommended in my reports on the same subject last year. Informa-

tion has been asked for relating to the levels, but up to the present time it has not been furnished. This being the only source from which pure water can be obtained in the neighbourhood, it is important for the sake of health that the reserve should be secured.

Another application has been received for a grant of £600 for a domestic water-supply at Mackaytown, proposing to extend the Karangahake system. On inspection this was found to be impracticable on account of the small size of the mains, and a scheme was recommended for an independent supply from near the source of Dogherty's Creek, pending levels, &c., being furnished to the department.

South Island.

The most important work in Otago is the near completion of the Eweburn Reservoir, which was commenced in June, 1898. After an exhaustive examination of the ground by boring and shaft-sinking to ascertain the nature of the bottom for safe foundations, it was decided to construct the embankment of earth with an impervious face of specially puddled clay in preference to the usual manner of a clay or concrete core in the centre of the dam. At first, on account of a doubt of the supply of water being sufficient to fill a higher dam, it was determined to construct only to 50 ft., provision being made in the base for extension, if found to be advisable. Experience proving, however, that, in spite of the low rainfall and comparatively limited catchment-area of the neighbourhood, the enclosure filled very rapidly by the melted snow down the main gully from Mount Ida, directions were given to raise the structure to 70 ft., with a 65 ft. bywash level. Although the nature of the bottom had been thoroughly tested before the foundations were commenced, it was found upon excavating that the schist cliff on the western wing was not sound, and in one place an ancient disintegrated slip of loose stone had to be removed and puddled in with clay. No other difficulty was met with until crossing the end of the rock bottom to the eastward of the creek, where the sudden dip of the schist-rock occurs. There a considerable amount of sandy clay had to be removed, and before a safe and firm foundation could be got several tons of puddled clay had to be buried. When carrying along the foundation thrust-wall of the face-core up the spur or eastern wing of the dam, a slip caused by frosts during the severe winter of 1899 buried the working-faces and supply-roads to the dam. On excavating this a soft sandy strata slip was exposed, which had to be cleared out to a firm clay-bed, and filled in with sound puddled clay. These unforeseen difficulties, and some minor ones not needful to mention, have considerably increased the cost on the original estimate.

I wish to call attention to the fact that in works of this description, more especially in such a locality—2,200 ft. above sea-level—the frosts are severe for three months in winter, causing one of the most trying conditions to work under. Several times the operations had to be suspended to avoid unequal subsidence of frozen material and to allow of proper amalgamation of the layers of clay deposited.

From the time of excavating for the foundations to laying the outlet-pipes and fixing the sluice-valves, the work has been carried out by day-labour, directed by Mr. Robert Johnson as Inspector under Mr. R. H. Browne, the County Engineer for Maniototo, who has had the immediate supervision of the works. Since then (with the exception of the quarrying and face-stone pitching) the work has been done under Mr. Albert Butler by co-operative labour. Some breaks in the steady continuance of the work have occurred, owing to the scarcity of hands during the summer (owing to mining and rabbiting), carts, and adverse weather, but on the whole the work has been fairly satisfactory, and highly creditable to the officers in charge.

In some respects the design and construction is a departure from the general method of dam-construction, inasmuch as the impervious portion is on the front of the dam, instead of from the base up through the centre to the crest. To me it is evident that if the core, which is the vital part of the dam, is placed in the centre, all that portion in front of it, unless of impervious material, must become water-logged, and, instead of being a factor of safety, is highly dangerous to stability. In this case, however, the material is so good and well adapted to the purpose that the whole bank is constructed of gravelly clay.

Another departure from the usual practice is the method of raising and lowering the inner sluice-valve or gate, and this was an expedient devised on account of the severe frosts during the three or four winter months. To project in the ordinary way a bridge or stage from the crest of the dam to the lifting-gear of the sluice-gate at a height of 70 ft. in such a climate would undoubtedly lead to breaking of gear through the superincumbent weight of ice freezing to the draw-rod, in addition to the weight of rod and strength of gear necessitated by such a lift. A plan was therefore designed, as shown on the drawing, of lifting and lowering the inner sluice-gate by means of an ordinary pinion and rack, the shutter (of boiler-plate) running in a rabbeted frame propelled by a chain wound round the drum and connected to shackled rods running on rollers up the pitched face of the dam and communicating with a hand crab-winch set in the crest. The shutter can be lowered or raised with ease by one man, and the whole gear being under water when the reservoir is full, any danger or inconvenience from frost is avoided, besides the saving of the usual expensive timber structure and screw lifting-gear usually employed for the purpose.

The outlet-pipes are ordinary cast-iron socket, 20 in. inside diameter by 12 ft. in length and $\frac{7}{8}$ in. thick, lead-jointed in a bed of concrete on a masonry wall founded on the rock-bottom through the base of the dam to the outlet-valves, three in number, connected by means of a breeches-pipe. If the end or working outer-valve gets choked or out of order (as they sometimes do), it can be removed, and the second take its place. The third valve is intended to supply the water in emergencies when by chance the other two are not serviceable.

Water has been drawn from the reservoir through the Mount Ida Water-race, and used by the miners round and about Naseby since the outlet-valves were fixed.

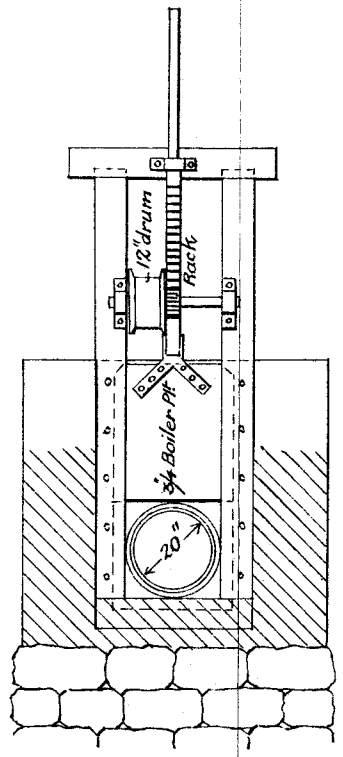
The total cost of construction up to date has been £13,893, and as it is estimated that the

3/8" chain passed six times round drum, both ends shackled to two 5/8" rods running on rollers on pitched slope to hand crab winch fixed on crest of Dam. Another 3/8" chain six times round drum of winch and shackled to rods. By means of winch the wrought iron sliding plate shutter will be raised or shut down by turning handles either way as desired.

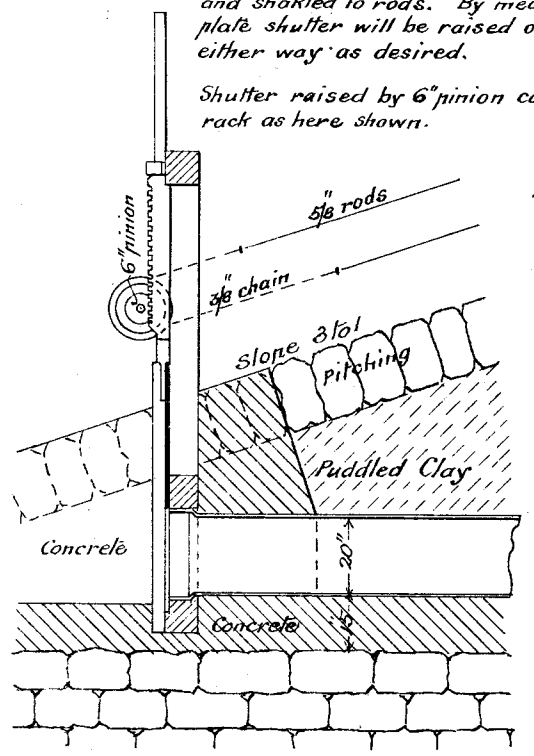
Shutter raised by 6" pinion cast on drum and working in the rack as here shown.

Three outlet revolving nut gunmetal faced Sluice valves, arranged for working during repairs.
All interchangable.
Covered in by galvanized iron house.

Scale
12" 6" 0" 1' 2' 3' 4' 5' 6' 7' 8' 9' 10' 11' 12' 13' 14' 15'

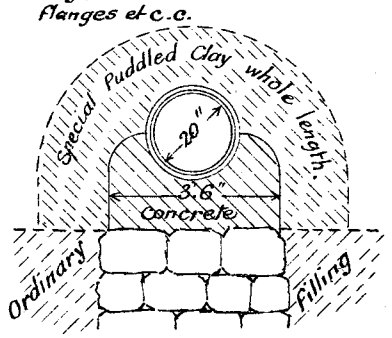


Front View

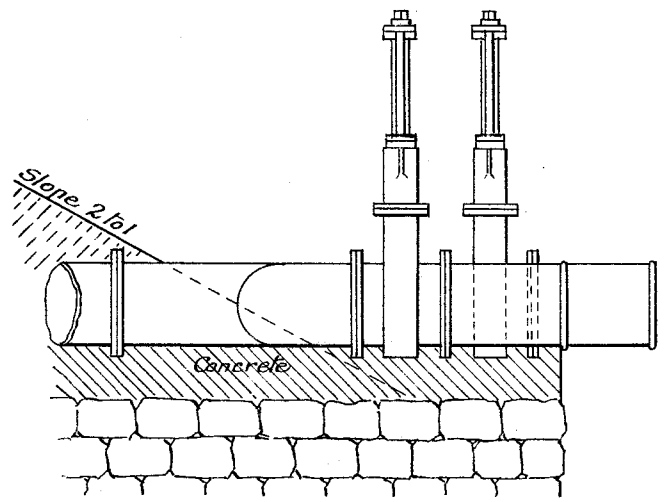


Longitudinal Section

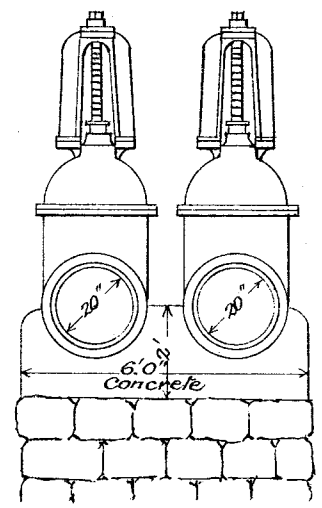
Through outlet pipe laid on a bed of fine concrete on rubble masonry wall founded on bed rock. The pipes covered full length with special puddled clay, well rammed around flanges etc.c.



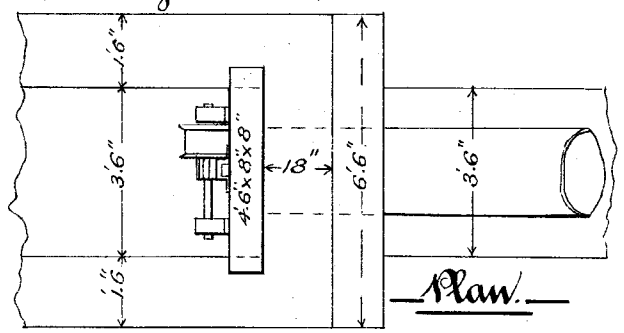
Cross Section of Pipe



Longitudinal Section

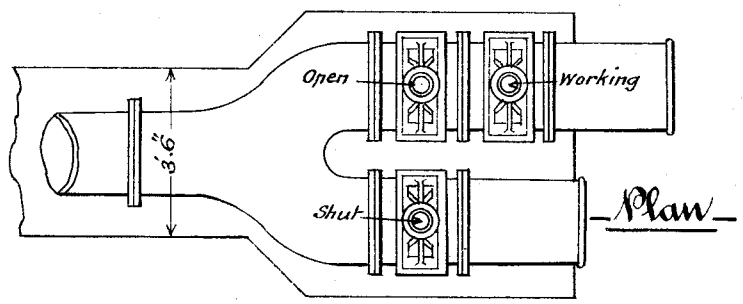


Front View



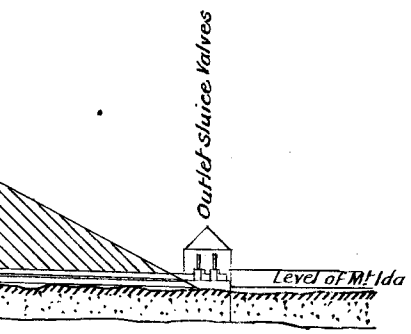
Plan

Inlet Sluice Gate

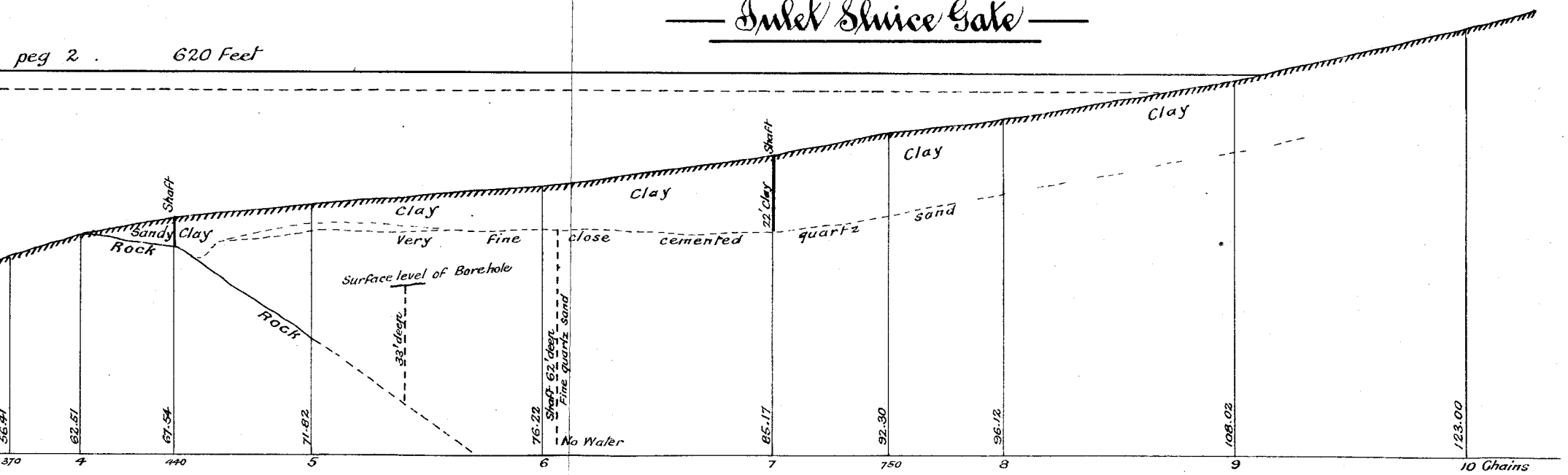


Plan

Outlet Valves



peg 2 . 620 Feet



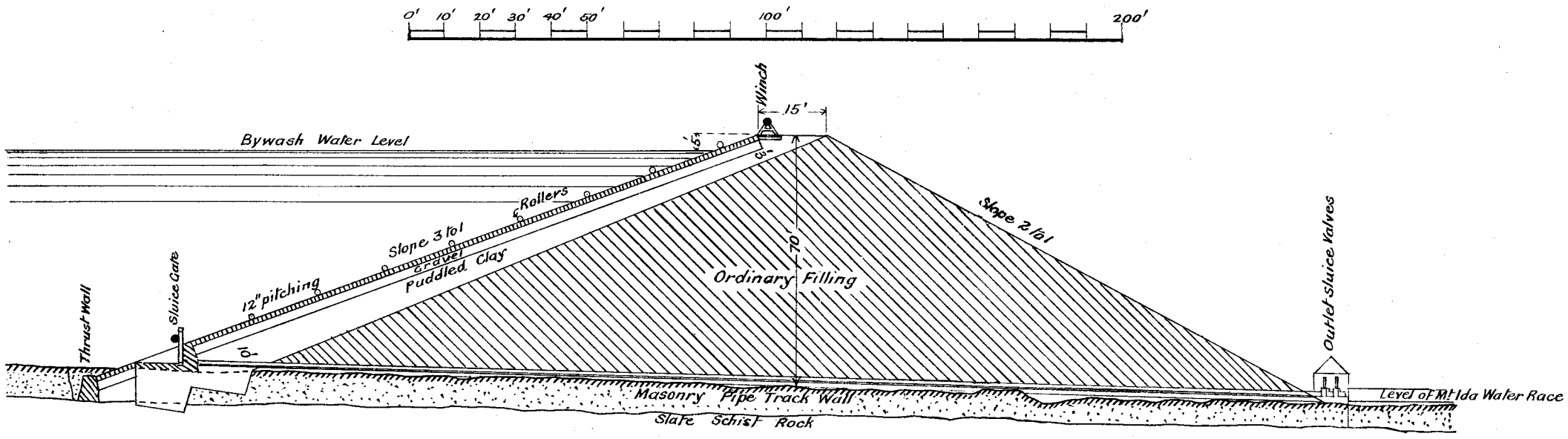
Section on centre line of Dam.

J. Pethaw. A.M. Inst. C.E.
June 6th 1900.
To accompany annual report.

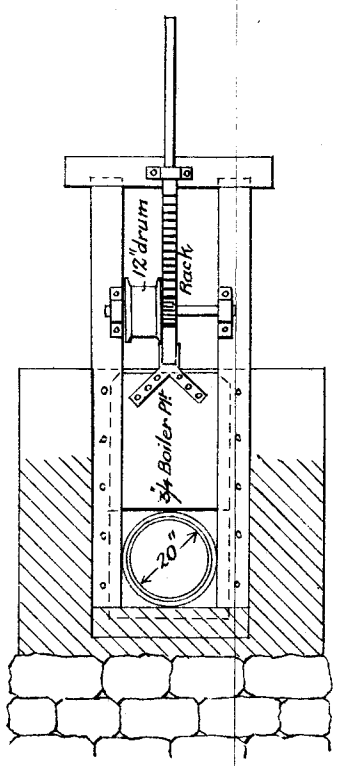
Ewelburn Reservoir, Otago.

Contents 500,000,000 Galls.

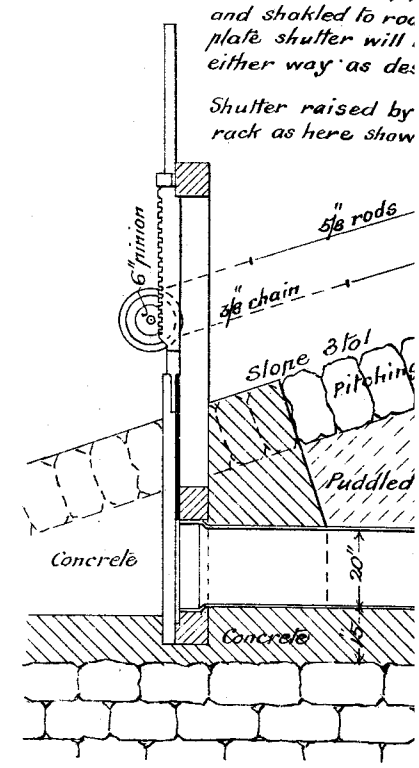
Dam.



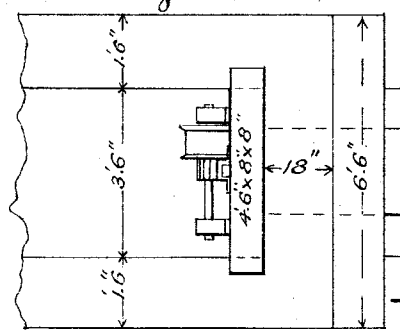
Cross Section on peg 2.



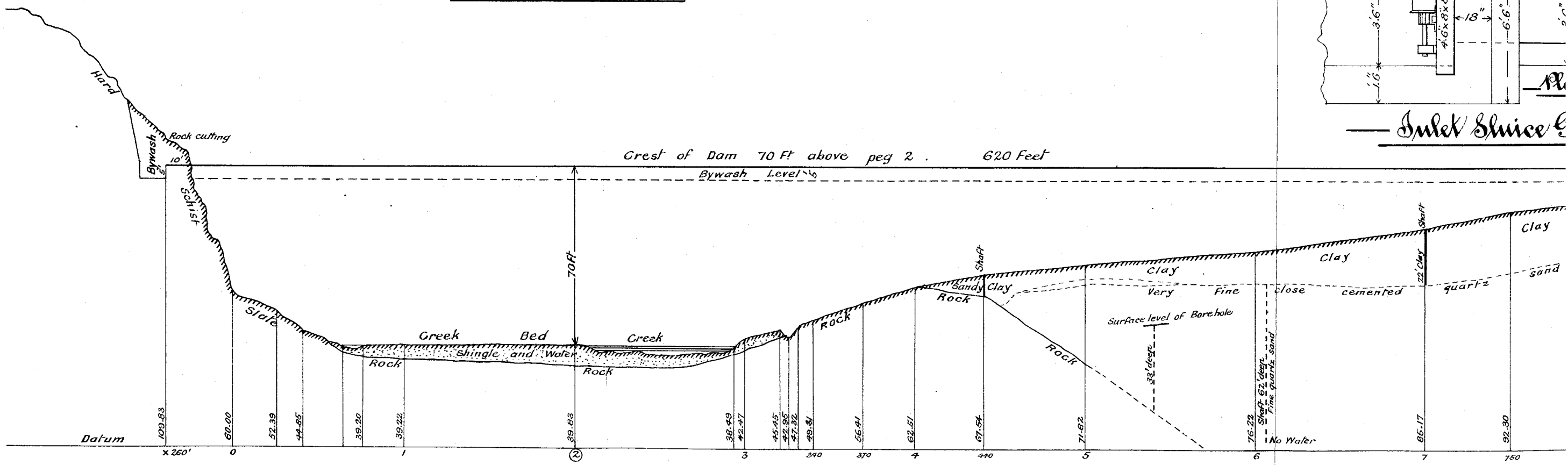
Front View



Longitudinal Section



Inlet Sluice G



Longitudinal Section on centre line of Dam.

reservoir will fill twice a year, to the extent of approximately 550,000,000 gallons, the near completion of the dam is greatly appreciated by the miners and farmers of the district.

In connection with this reservoir a portion of the Mount Ida Water-race between the dam and Naseby has been cleaned out and in places enlarged to carry the extra water of twenty-five Government sluice-heads from the dam.

The reservoir site recommended in my general report on water-conservation for irrigation of the northern portion of the Ida Valley (Parliamentary Paper C.–4, 1897) having been rendered useless for the purpose by the construction of the embankment of the extension of the Central Otago Railway to Poolburn, it is necessary for the advancement of the farming industry in the valley to explore for another reservation, and, on my final inspection of the Eweburn Dam, I purpose examining the gorge lower down, and if the elevation proves sufficient to distribute the water advantageously a dam may be constructed to store a moderate quantity of water.

Water-races, West Coast.

Several applications for subsidies by companies owning or projecting water-races for sluicing purposes having been forwarded to the department, examinations and reports of the Hohonu, Moonlight, Bell Hill, and Virgin Flat have been made, but in each case the applications have been refused, as before they can be considered it must be shown that the proposed work will be for the public good, and not for the profit of companies or individuals who may apply for subsidies for works that are only likely to benefit themselves.

In continuation of the surveys made in connection with pumping the deep levels of Ross Flat by electric transmission of the water-power from the Mikonui River, plans and estimates of the lower scheme have been prepared, and those of the Upper Gorge scheme (Gagliardi's) are in course of preparation for office record.

GENERAL.

That water stored in convenient situations for the use of miners in the South Island, and more especially for irrigation in Central Otago, is urgently needed there can be no doubt; but, as I have before pointed out, the numerous prior rights monopolising the water in all the principal creeks and rivers is a serious drawback in the way of even any moderate system of water-conservation, involving as it will the extinguishment of rights either by purchase or compensation. Still, I am inclined to think that for mutual benefit there are instances in which equitable arrangement may be made so that the owners of existing rights shall receive their granted number of heads of water, and in addition the advantage of a supply from storage in the dry time of year.

That the conditions under which water rights were taken up have not been complied with in many cases I am sure there is little doubt, and after a searching investigation a number of these rights should be cancelled. Speaking generally, it may be well to mention that of the two interests in Central Otago, although both are of great importance, I am of opinion that water is more required for irrigation than mining on the Maniototo Plains and in the Ida Valley.

REPORTS FOR PUBLIC WORKS AND MARINE DEPARTMENT.

In addition to the above works pertaining to the Mines Department, the following reports have been prepared and designs formulated for the Public Works and Marine Departments: Improvements to the entrance of Okarito Lagoon; Port Robinson (Cheviot) landing service, breakwater and wharf; erosion of Wanganui river-bank at Aramoho; and wharf at Maketu, Bay of Plenty.

T. PERHAM, A. M.Inst., C.E.,
Engineer, Water-conservation.

LIST OF MINE-MANAGERS, BATTERY-SUPERINTENDENTS, AND ENGINE-DRIVERS WHO HAVE OBTAINED CERTIFICATES UNDER THE MINING AND COAL-MINES ACTS OF 1886, 1891, 1894, AND 1896, AND "THE INSPECTION OF MACHINERY ACT 1882 AMENDMENT ACT, 1894."

As there have been several inquiries made as to the names of persons who hold certificates as mine-managers and engine-drivers, the annexed is a complete list of those holding certificates at the date of this report, taken from the register:—

THE MINING ACT.

FIRST-CLASS SERVICE CERTIFICATES.

Issued under "The Mining Act, 1886," without Examination.

Adams, H. H., Waiorongomai.
Anderson, P., Thames.
Andrews, R., Coromandel.
Andrews, T., Thames.
Barclay, T. H., Thames.
Bennett, J., Alexandra.
Benney, J., Coromandel.
Black, T., Waiomoi.
Bollersley, N., Boatman's.
Bradbury, M., Reefton.
Bray, John, Lyell.
Burch, W. H., Thames.
Byrne, J. F., Stafford.
Cameron, A., Macetown.
Cameron, E., Te Aroha.
Chapman, J. A., Dunedin.
Clarke, G. S., Thames.
Comer, R., Thames.
Conradson, M., Lyell.
Corin, W., Thames.
Cornes, C. A., Karangahake.
Coutts, J., Thames.
Crawford, T. H., Thames.
Crowley, C., Reefton.
Cummings, W., Reefton.
Davis, J. E., Queenstown.
Davey, C., Ross.
Donald, J., Cromwell.
Dryden, S., Thames.
Dunlop, T. A., Thames.
Edwards, J., Skipper's.
Elliott, J., Macetown.
Evans, F., Skipper's.
Evans, J. H., Skipper's.
Fitzmaurice, R., Reefton.
Frewen, J. B., Queenstown.
Gavin, T., Te Aroha.
Gilbert, J., Reefton.
Gilmour, T., Thames.
Giles, G. F., West Wanganui.
Glass, W. M., Naseby.
Goldsworthy, J., Waiorongomai.
Greenish, J., Reefton.
Greenville, W., Ohinemuri.
Hall, J. P.
Hansen, P. C., Thames.
Harris, J., Owen's Reefs.
Harrison, R. H., Coromandel.
Hicks, T. B., Thames.
Hilton, G. P., Bendigo.
Hodge, F., Coromandel.
Hollis, W., Thames.
Hunter, R., Thames.
James, F., Thames.
Jamieson, A., Coromandel.
Jenkins, M., Wakatipu.
Johnstone, H., Bluespur.
Julian, J., Boatman's.
Kelly, J., Lyell.
Kerr, J., Thames.

FIRST-CLASS SERVICE CERTIFICATES—*continued.*

Lawn, E., Black's Point.
Lawn, H., Boatman's.
Lawn, J., Reefton.
Littlejohn, W., Karangahake.
Lowe, E. W., Thames.
Malfroy, J. M. C., Ross.
Martin, W. G., Thames.
McCallum, J., Reefton.
McCullough, R., Thames.
McGruer, G. N., Karangahake.
McIlhaney, J., Thames.
McIntosh, D., Bluespur.
McKay, J., Ross.
McKenney, J., Reefton.
McKenzie, W., Thames.
McLeod, G., Coromandel.
McLiver, F., Thames.
McLiver, H., Thames.
McMaster, J., Reefton.
Moore, H. W., Thames.
Moore, J. H., Thames.
Morgan, R., Otago.
Morrisby, A. A., Glenorchy.
Nasmyth, T., Reefton.
Newman, W., Naseby.
Northey, J., Thames.
O'Sullivan, D. E., Thames.
Polton, A., Karangahake.
Porter, J., Waipori.
Purvis, G., Ross.
Quinn, E., Te Aroha.
Radford, T., Thames.
Ralph, J. G., Thames.
Ranger, J., Reefton.
Rasmussen, C. L., Mokihinui.
Rasmussen, C. P., Mokihinui.
Reid, P., Coromandel.
Resta, L., Macetown.
Roberts, E., Ross.
Rooney, F., Reefton.
Scott, T., Waiorongomai.
Searight, A., Reefton.
Senior, J., Thames.
Smith, J. E., Thames.
Stone, F., Karangahake.
Steedman, J. B., Thames.
Sturm, A., Waipori.
Taylor, N., Thames.
Todd, C., Heriot.
Treloer, J. S., Reefton.
Tripp, R. S., Arrowtown.
Vivian, J. G., Thames.
Vivian, S., Reefton.
Waite, C. D., Thames.
Waite, E., Thames.
Walker, J. W., Thames.
Watson, T., Reefton.
Wearne, J. E., Endeavour Inlet.
Wearne, T., Endeavour Inlet.
Wilcox, J., Thames.
Williams, J., Skipper's.
Wright, G., Boatman's.
Wylie, W., Ross.
Young, G., Skipper's.

First-class Mine-managers' Certificates, issued after Examination, under "The Mining Act, 1886," and Amendment Acts.

Adams, B., Thames.
Baker, W., Thames.
Black, G., Reefton.
Caples, P. Q., Reefton.
Carter, J., Thames.
Casley, G., Reefton.
Cochrane, D. L., Reefton.
Colebrook, J. D., Coromandel.
Coombe, J., Reefton.
Crawford, J. J., Thames.
Cummings, W., Reefton.
Donaldson, W., Otago.
Fleming, M., Thames.
Gardner, W. P., Reefton.
Harris, W., Thames.
Horn, G. W., Thames.
Horne, W., Coromandel.
Hornick, M., Thames.
Hosking, G. F., Auckland.
Kruizenza, W., Reefton.
Lawn, T., Reefton.
Logan, H. F., Wellington.
Mangan, T., Thames.
Mouat, W. G., Dunedin.
Truscott, G., Thames.
Watkins, W. E., Reefton.
Wilkie, J., Reefton.

First-class Mine-manager's Certificates, issued on Production of Certificate from a Recognised Authority outside the Colony, under "The Mining Act, 1886," and "The Mining Act, 1891."

Argall, W. H., Coromandel.
Beckwith, L. H., Wellington.
Datson, J., Manaia.
Goold, A. L., Auckland.
Griffiths, A. P., Auckland.
Griffiths, H. P., Auckland.
Hailey, R. C., Dunedin.
Williams, W. H., Auckland.

First-class Mine-managers' Certificates, issued after Examination, under "The Mining Act, 1891."

Agnew, J. A., Thames.
Annear, William, Reefton.
Bennett, E. P., Thames.
Boydell, H. C., Coromandel.
Bradley, R. J. H., Te Puke.
Bray, E., Thames.
Bruce, Malcolm, Thames.
Carroll, J., Lyell.
Cartwright, E., Thames.
Crabb, J., Reefton.
Dobson, J. A., Auckland.
Evans, H. A., Wellington.
Fahey, P., Reefton.
Flannigan, Francis, Reefton.
Gilmour, J. L., Thames.
Hodge, J. H., Thames.
Hughes, D., Thames.
James, T., Thames.
Keam, P. E., Thames.
Lane, J., Reefton.
Lawn, C. H., Capleston.
Linck, F. W., Thames.
Marshall, F., Reefton.
Morrison, R., Thames.
McDermott, J., Thames.
McDermott, G., Thames.
McDermott, W., Thames.
McGregor, W. T., Thames.
McKenzie, H. J., Coromandel.
McPeake, J., Thames.
O'Keeffe, M. D., Thames.
Paul, Matthew, Thames.
Paltridge, Henry, Thames.
Prince, F. H., Reefton.
Robertson, D. B., Stafford.
Ross, Richard, Thames.
Russell, Murray, Dunedin.
Shepherd, H. F., Thames.
Stanford, W. J., Macetown.
Steedman, J. G., Thames.
Sutherland, Benjamin, Reefton.
Tierney, R., Thames.
Vialoux, F., Coromandel.
Warne, George, Thames.
Waters, D. B., Skipper's.
Watt, J., Thames.
White, G. H., Thames.
Whitley, A., Thames.
Williams, C., Capleston.

First-class Mine-managers' Certificates, issued after Examination, under "The Mining Act, 1898."

Arscott, R., Waihi.
Barker, B., Thames.
MacConachie, W., jun., Waihi.
MacDuff, R. B., Thames.
Stewart, F. Waihi.
Turnbull, E. V., Coromandel.

First-class Mine-managers' Certificates, issued under Section 313 of "The Mining Act, 1891."

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

First-class Mine-managers' Certificates of Competency granted to Holders of Provisional Warrants under Section 32 of "The Mining Act Amendment Act, 1896."

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

SECOND-CLASS SERVICE CERTIFICATES AS MINE-MANAGERS.

Issued under "The Mining Act, 1891."

Adams, W. J., Thames.
Agnew, J. A., Coromandel.
Allen, Richard, Reefton.
Argall, A. E., Coromandel.
Bennett, C. H., Coromandel.
Begley, Thomas, Reefton.
Beard, W. T., Reefton.
Bone, William, Reefton.
Bowler, John, Thames.
Blair, Thomas, Kuaotunu.
Bray, Edwin, Reefton.
Brownlee, Thomas James, Thames.
Brokenshire, James, Thames.
Bolitho, James, Reefton.
Brown, John, Macrae's.
Bremner, John, Coromandel.
Borlase, J. H., Capleston.
Bunny, Joseph, Thames.
Byrne, John, Karangahake.
Caird, Alexander McNeil, Reefton.
Campbell, J., Kuaotunu.
Climo, Noah, Coromandel.
Comer, George, Thames.
Cowan, Hugh, Kuaotunu.
Corbett, T., Paeroa.
Comer, W. W., Thames.
Crabb, Thomas, Reefton.
Daniel, P. F., Greymouth.
Dobson, John Allen, Kuaotunu.
Edwards, George, Westport.
Ellery, John, Reefton.
Flannigan, Francis, Reefton.
Foster, Thomas, Wellington.
Gale, C. W., Coromandel.
Gill, George, Thames.
Glasgow, T. M., Thames.
Goldsworthy, Henry, Thames.
Govan, Joseph, Thames.
Griffin, Patrick, Thames.
Grimmond, Joseph, Ross.
Goldsworthy, William, Mauku, Auckland.
Gemmings, Charles, Thames.
Gribble, James, Norsewood.
Guthrie, John, Wellington.
Guy, Robert, Kuaotunu.
Harvey, William, Reefton.
Hardman, James Edward, Thames.
Harris, R., Thames.
Hetherington, William, Thames.
Hicks, W., Thames.
Hill, Alex. Grey, Waikakaho.
Hore, John, Wellington.
Hollis, Fred. J., Waihi.
Hornibrook, H. P., Kuaotunu.
Jamieson, John, Reefton.
Johnstone, William, Collingwood.
Jobe, James, Thames.
Johns, Thomas, Thames.
Kendall, Henry, Thames.
Kerr, George, Kamo.
Kirker, Thomas, Thames.
Laughlin, David, Thames.
Law, John, Thames.
Lough, H., Thames.
Loughlin, S., Thames.
McLean, James, Thames.
McLean, Alex., Coromandel.
McLean, Charles, Thames.
McCormick, Charles, Coromandel.
McQuillan, John, Reefton.
McNeill, Daniel, Thames.
McNeill, George, Upper Kuaotunu.
McCombie, John, Karangahake.
McEwen, James, Reefton.
McLoghry, Archibald, Karangahake.
Mackay, William, Nenthorn.
Martin, James, Reefton.
Meagher, John, Karangahake.
Mills, George, Thames.
Mayn, John, Coromandel.
Martin, David, Black's Point.
Morgan, William, Upper Thames.
Moorecroft, Thomas, Thames.
Milne, John, Thames.
Moyle, Thomas, Thames.
Naysmith, James, Reefton.
Newdick, Alfred, Thames.
Notman, Alexander, Reefton.
O'Keefe, M. W. D., Thames.
Page, John, Lyell.
Parkiss, Jos. W., Reefton.
Potts, W. H., Thames.
Primrose, J., Kuaotunu.
Pettigrew, Robert, Sydney.
Peebles, Alexander, Kuaotunu.
Phillips, W. H., Thames.
Pollock, John, Thames.
Rabe, Henry, Thames.
Reid, Thomas Groat, Thames.
Rickard, John, Thames.
Richards, A. H., Kuaotunu.
Radford, Thomas, Thames.
Rogers, Charles Henry, Reefton.
Rogers, William Henry, Kumara.
Ross, J., Thames.
Rowe, James, Thames.
Shaw, James, Karangahake.
Sligo, Alex., Nenthorn.
Thomas, James, Thames.
Thomas, A., Thames.
Thomson, John, Dunedin.
Tregellas, James, Reefton.
Tregoweth, William, Thames.
Wells, Charles Lewis, Thames.
Willets, Henry, Thames.
Williams, James, Thames.
Williams, John, Thames.
Whisker, Charles, Thames.
White, John S., Karangahake.
Wilson, James R. S., Kuaotunu.
Wilson, J. G., Thames.
Woodcock, James, Thames.
Worth, Robert, Waihi.

Second-class Mine-manager's Certificates, issued after Examination, under "The Mining Act, 1891."

Benney, J., jun., Paeroa.
Christie, William, Waitekauri.
Draffin, S., Waitekauri.
Dunkin, T., Coromandel.
Evans, H. A., Skipper's.
Gatland, V. Y., Coromandel.
Mathewson, A., Hyde.
McNeil, A. H., Coromandel.
White, F. H., Kuaotunu.
White, G. H., Thames.

Second-class Mine-managers' Certificates, issued under Section 313 of "The Mining Act, 1891."

Connon, William, Thames.
Coran, Henry, Thames.
Edwards, E., Coromandel.
Kelso, Archibald, Coromandel.
McCormick, W. J., Waitekauri.

Second-class Mine-managers' Certificates of Competency granted to Holders of Provisional Warrants under Section 32 of "The Mining Act Amendment Act, 1896."

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

THE COAL-MINES ACT.

FIRST-CLASS MINE-MANAGERS' CERTIFICATES.

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

Aitken, T., Wendon.
Alexander, T., Brunnerton.
Austin, J., Sheffield.
Binns, G. J., Dunedin.
Bishop, J., Brunnerton.
Brown, T., Westport.
Brown, T., Glentunnel.
Cameron, J., Denniston.
Campbell, J. C., Fairfield.
Cochrane, N. D., Dunedin.
Collins, W., Taupiri.
Dando, M., Brunnerton.
Elliott, R., Wallsend.
Ferguson, A., Whitecliffs.
Freeman, J., Green Island.
Geary, J., Kamo.
Gray, J., Abbotsford.
Harrison, J., Brunnerton.
Irving, J., Kaitangata.
Jemison, W., Waimangaroa.
Kenyon, J., Shag Point.
Kerr, G., Kamo.
Lindop, A. B., Springfield.
Lindsay, W., Otago.
Lloyd, J., Invercargill.
Louden, J., Green Island.
Love, A., Whangarei.
Mason, J., Nightcaps.
May, J., Greymouth.
Moody, T. P., Kawakawa.
Moore, W. J., Springfield.
Nelson, J., Green Island.
Ord, J., Huntly.
Redshaw, W., Whangarei.
Reed, F., Westport.
Richardson, D., Abbotsford.
Shore, J., Kaitangata.
Shore, T., Orepuki.
Shore, W. M., Kaitangata.
Smart, W., Christchurch.
Smith, A. E., Nelson.
Smith, T. F., Nelson.
Sneddon, J., Mosgiel.
Swinbanks, J., Kawakawa.
Taylor, E. B., Huntly.
Thompson, A., Whitecliffs.
Walker, J., Collingwood.
Williams, W. H., Shag Point.

First-class Certificates issued after Examination under the Coal-mines Acts, 1886 and 1891.

Armitage, F. W., Auckland.
Armstrong, J., Brunnerton.
Barclay, T., Kaitangata.
Carruthers, J., Shag Point.
Carson, W., Kaitangata.
Coulthard, J., Taylorville.
Dixon, W., jun., Kaitangata.
Dunn, W., Brunnerton.
Dunn, W. R., Thames.
Elliott, R., jun., Denniston.
Fleming, J., Kaitangata.
Gibson, John, Westport
Gillanders, A., Shag Point.
Green, E. R., Abbotsford.
Green, J., Brunnerton.
Herd, J., Brunnerton.
Hosking, G. F., Auckland.
Hughes, D., Preservation Inlet.
Jebson, D., Canterbury.
Johnson, W. P., Thames.
Leitch, J., Blackball.
Leitch, W., Blackball.
McCormack, W., Denniston.
Milligan, N., Thames.
Murray, T., Westport.
Newsome, F., Denniston.
Sowerby, H., Denniston.
Tattley, E. W., Huntly.
Taylor, A. H., Waikato.
Turner, G. F., Shag Point.

Mine-managers' Certificates, issued on Production of English Certificate, under "The Coal-mines Act, 1886."

Binns, G. J., Dunedin.
Black, T. H., Waipori.
Broome, G. H., Ngakawau.
Cater, T., Auckland.
Cochrane, N. D., Dunedin.
Garrett, J. H., Auckland.
Hayes, J., Kaitangata.
Hodgson, J .W., Ross.
Macalister, J., Invercargill.
Nimmo, J., Oamaru.
Straw, M., Westport.
Tattley, W., Auckland.

First-class Mine-managers' Certificates, issued to Inspectors of Mines by virtue of Office, under the Mining Acts and the Coal-mines Acts.

Binns, G. J., Dunedin.
Cochrane, N. D., Westport.
Coutts, J., Thames.
Gordon, H. A., Wellington.
Gow, J., Dunedin.
Hayes, J., Dunedin.
McLaren, J. M., Thames.
Tennent, R., Reefton.
Wilson, G., Thames.

Mine-managers' Certificates, issued on Production of Certificate from a recognised Authority outside the Colony, under "The Coal-mines Act, 1891."

Alison, R., Greymouth.
Dixon, J., Westport.
Frame, Joseph, Kaitangata.
Irvine, James, Dunedin.
Jordan, R. J., Kaitangata.
Lewis, W., Blackball.
Pollock, James, Green Island, Otago.
Proud, Joseph, Wanganui.
Scott, Joseph, Ngahere.
Tennent, R., Brunnerton.
Wright, E. S., Auckland.

SECOND-CLASS MINE-MANAGERS' SERVICE CERTIFICATES.

Issued under "The Coal-mines Act, 1891."

Carson, M., Kaitangata.
Collier, Levi, Kamo.
Clarke, Edward, Shag Point.
Elliot, Joseph, Coal Creek.
Harris, John, Denniston.
Herd, Joseph, Brunnerton.
Howie, James, Kaitangata.
Leeming, William, Whitecliffs.
Lobb, Joseph, Mokau.
Love, Alexander, Orepuki.
McIntosh, Allan, Shag Point.
McLaren, J. M., Thames.
Marshall, J., Ngakawau.
Murray, Thomas, Denniston.
Nimmo, George Stewart, Ngapara.
Radcliffe, William, Reefton.
Roberts, John, Brunnerton.
Ross, John, Kawakawa.
Sara, James, Reefton.
Smith, Charles, Whangarei.
Thomas, James, Springfield.
Wallace, William, Huntly.
Willetts, John, Papakaio.
Willetts, John Morris, Papakaio.
Young, William, Waimangaroa.

Second-class Certificates issued after Examination under the Coal-mines Acts, 1886 and 1891.

Austin, W. B., Sheffield.
Barclay, T., Kaitangata.
Clemo, G., Whangarei.
Dixon, W., jun., Kaitangata.
Harris, A., Saddle Hill.
Hill, R., Abbotsford.
Hunter, A., Southland.
Lindsay, J. B., Orepuki.
Parcell, W., jun., Bannockburn.
Snow, T., Mercer.
Waldie, A. B., Mokau.
Westfield, C., Fairfield, Otago.

BATTERY-SUPERINTENDENTS' CERTIFICATES.

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

Adams, H. H., Waihi.
Aitken, R. M., Reefton.
Banks, Edwin Gripper, Waihi.
Barry, Hubert Percy, Waihi.
Goldsworthy, Henry, Kuaotunu.
Goldsworthy, John, Kuaotunu.
Greenway, H. Howard, Auckland.
Heard, G. St. Clair, Waihi.
Hope, John S., Waitekauri.
Hutchison, William, Karangahake.
Margetts, Frederick Ernest, Kuaotunu.
McLellan, William, Waitekuri.
Mellett, Richard Sheridan, Waitekauri.
Napier, James, Karangahake.
Noble, James R., Karangahake.
Park, James, Thames.
Shepherd, Henry Franklin, Waihi.
Walker, James A., Kuaotunu.
Wilson, Arthur E., Waihi.
Wilson, James Kitchener, Auckland.

Battery-superintendents' Certificates, issued after Examination, under "The Mining Act 1891 Amendment Act, 1894."

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

Battery Superintendents' Certificates issued after Examination, under "The Mining Act, 1898."

Adams, J. H., Thames.
Allen, D. V., Thames.
Baker, W. H., Thames.
Bush, H. R., Thames.
Carpenter, W. E., Karangahake.
Coote, J. M., Thames.
Couper, J., Thames.
Empson, J. B., Karangahake.
Fletcher, H. T., Katikati.
Fraser, J. M., Reefton.
Grayden, J., Waitekauri.
Hargraves, E. P., Waihi.
Kidd, R. B., Waitekauri.
Launder, G. H., Waitekauri.
Lawless, L. J., Paeroa.
Stephens, H., Dunedin.
Thurlow, J. R., Coromandel.
Tomlinson, W. F., Dunedin.
Watson, A. B., Waitekauri.

ENGINE-DRIVERS' CERTIFICATES.

Issued under "The Coal-mines Act, 1886."

Bainbridge, William, Brunnerton.
Beirn, William H., Kaitangata.
Clark, A., Kaitangata.
Davidson, Robert, Walton Park.
Elliott, R., Denniston.
Eltringham, Stephen, Greymouth.
Foote, Thomas, Miranda.
Gall, Adam, Huntly.
Gill, Robert, Shag Point.
Gillies, D., Walton Park.
Girven, Adam, Kawakawa.
Grundy, Walter, Kamo.
Gibson, J., Denniston.
Gray, G. A., Kaitangata.
Harrison, C. F. R., Huntly.
Hazeldene, T., Denniston.
Hartley, H., Huntly.
Henderson, J., Huntly.
Hetherington, R., Huntly.
Howie, William, Walton Park.
Kelly, Peter, Kaitangata.
Leisham, G., Denniston.
Marriott, T., Huntly.
Mason, J., Springfield.
Muir, T., Huntly.
Moore, Luke Martin, Brunnerton.
McFarlane, Henry, Miranda.
McGarry, James, Brunnerton.
McGregor, Duncan, Stirling.
McIntosh, Donald, Allandale.
McVie, John, Walton Park.
O'Neil, J., Denniston.
Porter, H. R., Huntly.
Ryan, T., Huntly.
Sampson, J., Huntly.
Saunders, J., Denniston.
Shore, Joseph, Kaitangata.
Skilton, F. G., Denniston.
Skellern, R., Huntly.
Smith, J., Denniston.
Southall, James, Brunnerton.
Thomas, William, Kamo.
Troughhear, Robert, Dobson.
Turner, Henry, Kawakawa.
Vincent, James, Miranda.
Wearn, Alfred, Boatman's.
Wearn, James, Wallsend.
Williams, Llewellyn, Kawakawa.
Woods, William, Kawakawa.
Williams, F. A., Shag Point.

ENGINE-DRIVERS' SERVICE CERTIFICATES.

Issued under "The Mining Act, 1891."

Audley, F., Coromandel.
Battens, H., Coromandel.
Black, C., Reefton.
Black, G. J., Reefton.
Bridson, Mat. J., Thames.
Casley, J., Thames.
Clerkin, F., Reefton.
Crabb, J., Reefton.
Crofts, J. W., Skipper's.
Cook, W., Thames.
Craig, D., Thames.
Davies, T., Thames.
Dunstan, J., Thames.
Faithful, William, sen., Cromwell.
Faithful, William, jun., Cromwell.
FitzMaurice, Raymond, Reefton.
Grundy, T., Thames.
Harrison, R. H., Kuaotunu.
Hope, J. S., Waitekauri.
Hufton, George, Reefton.
Ivey, R., Thames.
Latimer, Alfred, Dunedin.
Lamberton, J., Reefton.
Lawn, E., Reefton.
McLean, J., Reefton.
Milne, S., Coromandel.
Murphy, A. R., Queenstown.
Morton, C., Thames.
Patterson, D., Reefton.
Patten, A. C., Reefton.
Phillips, W. H., Thames.
Ryan, J. P., Coromandel.
Roche, H., Thames.
Saunders, William, Reefton.
Smith, R., Thames.
Skilton, A. G., Westport.
Sullivan, W., Coromandel.
Titley, A. W., Black's Point.
Walding, J., sen., Coromandel.
Walding, J., jun., Coromandel.
Warne, G., Thames.
Wishart, R., Thames.
Wood, A., Thames.

Engine-drivers' Certificates, issued after Examination, under "The Mining Act, 1891."

Allen, A., Thames.
Auld, James, Reefton.
Blackadder, D., Reefton.
Cook, S., Fairfield.
Daldy, E. A., Coromandel.
Dunstan, I., Waihi.
Elliston, A. J., Reefton.
Lawn, C. H., Capleston.
McAuley, T., Reefton (for water).
Ross, M., Reefton.
Slowey, William, Reefton.
Wilson, F. H., Thames.
Wynn, M., jun., Reefton (for water).

ENGINE-DRIVERS' SERVICE CERTIFICATES.

Issued under "The Coal-mines Act, 1891."

Archibald, W., Kaitangata.
Barlow, William John, Shag Point.
Boag, John, Shag Point.
Forrestor, Robert, Kaitangata.
Girvan, R., Kawakawa.
Greening, Luke, Springfield.
Johnstone, R. N., Kaitangata.
McVie, Gavin, Kaitangata.
Milburn, Edward, Westport.
Park, John A., Huntly.
Prentice, J., Shag Point.
Rixon, William E., Shag Point.
Todd, William, Dunedin.
Webb, Peter Oliver, Nightcaps.

Engine-drivers' Certificates, issued after Examination, under "The Coal-mines Act, 1891."

Johnston, W. P., Kaitangata.
Marshall, D., Kaitangata.
Napier, A. T., Kaitangata.
Shearer, W., Huntly.

WINDING-ENGINE DRIVERS' CERTIFICATES OF COMPETENCY.

Issued under "The Inspection of Machinery Act 1882 Amendment Act, 1894."

Aickin, Charles James.
Allan, Peter.
Allan, James Alexander.
Allen, William John.
Ashby, William George.
Bainbridge, William.
Bainbridge, Henry.
Balfour, Herber Thomas.
Bell, Edward.
Bentley, John Daniel.
Berkery, John.
Bickford, Charles Frederick.
Black, George James.
Bolitho, James.
Bowman, Charles Henry.
Budge, George Symons.
Buddle, Frank.
Bunyard, Frederick Charles.
Burgess, Benjamin.
Buxton, Harry Arthur.
Bydder, Charles Alfred.
Campbell, Robert.
Casey, John Thomas.
Cathey, Alexander.
Chamberlain, Charles.
Chamberlain, John Edward.
Cheverton, George Henry.
Christmas, James.
Christian, Herbert.
Coad, Albert.
Colligan, John.
Copeland, Joseph Barlow.
Copeland, John.
Cowie, Alexander.
Cox, Archibald.
Craig, James.
Cunningham, George.
Dawson, William.
Dean, John.
Dodd, William.
Dodd, James.
Donnelly, Thomas.
Durham, Alfred Thomas.
Duthie, William James.
Eustace, Charles Henry.
Evans, Herbert Henry.
Falconer, Robert.
Fraser, Theodore Tinne.
French, William Henry.
Gillanders, Alexander Sinclair.
Gore, Cornelius Wesley.
Greenway, George.
Griffin, Lewis.
Hallinan, Thomas.
Harkins, William.
Henderson, George.
Henderson, William.
Henry, Francis.
Henry, Thomas Nelson.
Heslin, Frederick.
Highet, John.
Hindmarsh, Ralph St. John.
Hill, Benjamin.
Hughes, William Henry.
Hughes, William.
Hunter, George.
Hunter, Henry.
Jack, James John.
Jefcoate, James Edward.
Jenkinson, Alfred.
Johnson, Thomas.
Jones, Hugh Pughe.
Kay, John.
Kaye, Joseph Ernest.
Kelly, Peter George.
Kidd, William.
King, Hector William.
Lamb, Edward.
Langan, Gerald.
Langdon, Walker Henry Charles
Langford, Samuel George.
Lawle, James.
Leach, David.
Lennox, James Fisher.
Letcher, John Henry.
Lever, Harry Graham.
Lisle, James.
Lloyd, Thomas.
Lovatt, Charles Robert.
Lyons, John.

WINDING-ENGINE DRIVERS' CERTIFICATES OF COMPETENCY—*continued.*

Issued under "The Inspection of Machinery Act 1882 Amendment Act, 1894"—continued.

Mackie, Edward Morrison.
Maloney, James Joseph.
Martin, Thomas.
Meier, George Arthur.
Moffit, Henry John.
Moore, Michael.
Morgan, David John.
Morgan, William.
Morgan, Joseph.
Mulholland, Thomas.
Mussicks, John Jackson.
Mybroi, William.
McAnulty, William.
McAuley, Thomas.
McFarlane, Robert John.
McGlynn, James.
McGruer, Alexander.
McIntosh, John.
McIntosh, Allan Smith.
McIntyre, James.
McLaughlin, Thomas.
McLean, Arthur Charles.
McLean, William David Lindsay.
McLelland, James.
McMahan, Timothy.
McQuillan, Hugh.
Nelson, Henry.
Newton, James.
Nicholson, John Samuel.
Nilsson, John Oscar.
Norris, John William.
O'Sullivan, Thomas Francis.
Parker, Daniel.
Percy, Archibald Benjamin Badmin.
Provan, Andrew.
Radford, Thomas.
Rayner, Alfred Edward.
Redfern, William Henry.
Roach, Thomas Jenkin.
Robertson, John.
Roering, Franz.
Ryan, John Patrick.
Sanson, William.
Sargent, Henry.
Saunders, William Henry.
Schmetzer, Percy Carl.
Scobbie, George.
Scott, Walter George.
Seawright, Robert E. E. M.
Shore, George Henry.
Shortt, Edward.
Sinclair, George.
Skelton, John.
Slater, William.
Smith, Walter.
Smith, Robert.
Snow, John George.
Snow, Thomas Matthew.
Sutcliffe, George Henry.
Tattley, Ernest William.
Taylor, Alfred Edward.
Thwaites, William.
Thomas, Thomas.
Tills, Charles.
Todd, James.
Tollard, Alfred Harry.
Tomkies, Arthur Grettan.
Tomkies, Horace.
Trembath, John.
Turner, George Frederick.
Vosey, Percival.
Waddell, Andrew Hamilton.
Wearne, Jaketh Joseph.
Welby, Amos Walter.
Whitehouse, John.
Williams, Francis.
Williams, Reece.
Williams, Benjamin.
Wilkinson, Thomas.
Wilson, Daniel.
Wilson, Henry Etches.
Wilson, John.
Wood, John Dawley.
Wray, John.
Wylan, John.
Young, William Robert.

WINDING-ENGINE DRIVERS' SERVICE CERTIFICATES.

Issued under "The Inspection of Machinery Act 1882 Amendment Act, 1894."

Ballantyne, C. C.
Boswell, James.
Brokenshire, Joseph.
Broomfield, Charles Jones.
Bruggy, Patrick M.
Buchan, George A.
Burk, Thomas.
Cassidy, James.
Clarke, George.
Collier, Levi.
Coutts, John.
Cummock, John.
Davidson, Alexander.
Dunn, Joseph.
Elmore, William H.
Ford, Arthur S.
Graydon, Peter.
Griffin, Jonathan.
Gray, Edward.
Kennedy, Edward Thomas.
Leece, Henry S.
Lindsay, Robert.
McCormick, John.
McKenzie, John.
McMillan, William.
McQuade, Richard C.
Nichols, D. J.
Porch, John James.
Robinson, John.
Sachirthal, Edward.
Shanley, J. W.
Smart, William Henry.
Smith, Thomas.
Soppet, Frederic W.
Stevens, Samuel.
Thomson, James.
Verran, James.
Walsh, Patrick.
White, Alexander.
Wilson, James William.

HYDRAULIC WINDING-ENGINE DRIVERS' CERTIFICATES OF COMPETENCY.

Thomas Lamberton. Thomas Moyle. Thomas Richardson Watson.

HYDRAULIC WINDING-ENGINE DRIVERS' CERTIFICATES OF COMPETENCY.

Edwin Bray.

NUMBER of MACHINES employed in QUARTZ-MINING, and the VALUE thereof, for the Year ending the 31st March, 1900.

Mining District.	Machinery employed in Quartz-mining.									
	Steam-engines employed winding, crushing, &c.		Crushing-machines.	Stamp-heads.	Water-wheels.	Whims.	Whips and Pulleys.	Derricks.	Berdans.	Approximate Value of all Mining Plant included in this Return.
	Number.	Aggregate Horse-power.								
										£
Ohinemuri ..	55	2,640	4	534	17	1	1	..	47	260,205
North Hauraki ..	48	1,363	2	198	4	..	..	..	57	114,750
South Hauraki ..	31	1,142	2	485	30	..	..	..	186	215,335
Te Arona ..	3	18	..	18	1	..	..	..	4	6,300
	137	5,163	8	1,235	52	1	1	..	294	596,590

STATEMENT SHOWING THE WHOLE OF THE QUARTZ-CRUSHING MACHINES AND APPLIANCES FOR TREATING AURIFEROUS AND ARGENTIFEROUS ORES IN THE HAURAKI MINING DISTRICT FOR THE YEAR 1899–1900.

Locality where Machine is situated.	Name of Machine.	Name of Owners.	Number of Rock-breakers.	Number of Stamps.	Number of Ore-crushers and Lamberton Mills.	Number of Berdans.	Number of Pans.	Number of Settlers.	Number of Mortars.	Number of Retorts.	Number of Furnaces for Gold melting or retorting.	Number of Furnaces for Assay Purposes.	Number of Plants for Cyanide Process.	Number of Concentrating Plants.	Driven by Steam-power.	Driven by Water-power or Hand-power.
Coromandel County.																W. H.
Coromandel ..	Kapanga ..	Kapanga Gold-mining Co.	..	10	..	2	..	..	1	2	1	..	..	..	1	..
" ..	Telephone ..	Hauraki Gold-mining Co.	..	15	..	8	..	..	2	3	1	..	..	..	1	1 0
" ..	Corby ..	Scotty's Gold-mining Co.	..	9	..	8	..	..	1	2	1	..	..	..	..	1 0
" ..	Hauraki North ..	Hauraki North Gold-mining Co.	..	..	*1	1	..	..	1	1	1	..	..	..	1	..
..	Hauraki Associated	Hauraki Associated Gold-mining Co.	..	12	..	4	..	..	2	2	1	1	..	..	1	1 0
" ..	Success ..	Success Gold-mining Co.	..	10	..	4	..	..	1	1	1	..	..	..	1	..
" ..	Tokatea ..	Royal Oak of Hauraki Gold-mining Co.	1	15	..	8	..	..	1	1	1	..	..	..	1	..
" ..	Triumph ..	Triumph Gold-mining Co.	..	10	..	2	..	..	1	1	1	..	..	..	1	..
" ..	Progress - Castle Rock	Progress-Castle Rock Gold-mining Co.	1	2	..	2	..	..	2	1	..	1	..	..	..	1 0
" ..	Four-in-hand ..	Four-in-hand Gold-mining Co.	..	10	..	2	..	..	1	1	1	1	..	..	1	..
" ..	Vizard's ..	Cabbage Bay Extended Gold-mining Co.	..	4	..	1	..	..	1	1	1	..	..	..	..	1 0
" ..	Lanigan's ..	Kauri Freehold Estates	..	10	..	2	..	..	1	1	1	..	..	..	..	1 0
" ..	Opitonui ..	"	..	40	..	..	..	5	2	2	2	2	1	2	1	..
" ..	Owera ..	"	..	10	..	4	..	..	2	2	1	..	..	..	..	1 0
Kuaotunu ..	Try Fluke ..	Mariposa Gold-mining Co.	..	16	..	3	..	2	2	2	1	1	1	..	1	..
" ..	Great Mercury ..	Great Mercury Gold-mining Co.	..	10	..	1	..	1	4	2	1	1	1	..	1	..
" ..	Irene ..	Irene Gold-mining Co.	..	10	..	2	..	1	2	1	1	1	1	..	1	..
" ..	Kapai-Vermont ..	Kapai-Vermont Gold-mining Co.	1	..	†1	1	..	1	1	1	1	1	1	..	1	..
Manaia ..	Golden Hill ..	Golden Hill Gold-mining Co.	..	2	..	1	..	..	1	1	1	..	..	..	1	..
	Mahakarau ..	New Zealand Government	..	3	..	1	..	..	1	1	1	..	..	..	1	..
Thames County.																
Tapu	Sheridan ..	Bullion Gold-mining Co.	..	15	..	4	..	..	3	3	1	..	..	..	..	1 0
Mahara	Mahara Royal ..	Mahara Royal Gold-mining Co.	..	20	..	18	..	..	2	2	1	1	..	..	..	1 0
Waiomo	Monowai ..	Monowai Amalgamated Gold-mining Co.	1	10	..	1	1	2	1	2	1	1	1	1	1	1 0
Tararu	Scandinavian ..	Scandinavian Gold-mining Co.	..	8	..	4	..	..	1	1	..		..	1	..	..
"	New Alburnia ..	New Alburnia Gold-mining Co.	..	20	..	7	2	..	1	3	1	..	..	..	..	1 0
"	Tararu Creek ..	Tararu Mines Gold-mining Co.	..	30	..	6	..	..	3	2	1	1	1	..	1	1 0
"	Berry's ..	Charles Berry	..	1	..	3	..	..	1	2	1	..	..	..	..	1 0
"	Chicago.. ..	Chicago Gold-mining Co.	..	10	..	..	..	..	1	1	..	..	..	..	..	1 0
Puru	Puru Consolidated	Puru Consolidated Gold-mining Co.	..	10	..	2	..	..	1	1	..	..	..	..	..	1 0
Karaka	Claremont ..	George Bryant	..	1	..	1	..	..	1	3	..	..	..	..	..	0 1
Otonui	Eureka ..	James Renshaw ..	..	12	..	4	..	..	1	1	..	..	..	..	..	1 0
Hape	Anchor ..	Ethel Reefs Gold-mining Co.	..	4	..	1	..	..	1	1	..	..	..	..	..	1 0
"	Fortuna ..	Fortuna Gold-mining Co.	..	5	..	..	..	..	1	1	1	1	1	..	..	1 1
Kerikeri	Kerikeri ..	M. Fleming	..	4	..	1	..	..	1	1	..	..	..	..	..	1 0
Puriri	Puriri ..	Puriri Gold Estates Gold-mining Co.	..	8	..	2	..	..	1	1	..	..	..	..	..	1 0
"	Hit or Miss ..	M. Bedford	..	6	..	2	..	..	1	1	..	..	..	..	..	1 0
Tairua	Bonnie Scotland..	— McLiver	..	20	..	6	..	..	2	1	..	..	..	..	1	..
"	Ajax ..	"	..	12	..	4	..	..	1	1	..	..	..	..	1	1 0
"	Cannon's ..	Richard Cannon ..	..	4	..	1	..	..	1	1	..	..	..	..	1	..
"	Broken Hill ..	Broken Hill Gold-mining Co.	..	20	..	6	..	..	1	1	..	1	1	..	1	..
"	Whangamata ..	Ditto	2	..	2	6	..	..	1	1	1	1	1	..	..	1 0
Ohui	Ohui	W. Cook (Last Chance) ..	..	2	..	1	..	..	1	1	..	..	..	..	..	1 0
Omahu	Sheet Anchor ..	Tillsley Brothers ..	..	2	..	1	..	..	1	1	..	..	..	..	1	..
Thames Borough ..	Kuranui ..	Kuranui Gold-mining Co.	..	20	..	6	..	..	2	1	..	..	..	..	1	..
" ..	Moanataiari ..	New Moanataiari Gold-mining Co.	..	60	..	21	4	..	2	6	3	..	1	1	..	2 0
" ..	Judd's	Charles Judd	..	..	..	2	9	..	..	..	1	..	..	..	..	1 0
" ..	Comer's ..	Kuranui-Caledonian Gold-mining Co.	..	20	..	5	..	..	2	1	1	1	..	..	..	1 0
" ..	May Queen ..	May Queen Gold-mining Co.	..	33	..	8	3	..	2	3	2	..	..	..	..	1 0

* Robinson's ore-crusher, equal to five stamps. † Otis mill.

STATEMENT SHOWING THE WHOLE OF THE QUARTZ-CRUSHING MACHINES AND APPLIANCES FOR TREATING AURIFEROUS AND ARGENTIFEROUS ORES IN THE HAURAKI MINING DISTRICT FOR THE YEAR 1899–1900—*continued*.

Locality where Machine is situated.	Name of Machine.	Name of Owners.	Number of Rock-breakers.	Number of Stamps.	Number of Ore-crushers and Lamberton Mills.	Number of Berdans	Number of Pans.	Number of Settlers.	Number of Mortars.	Number of Retorts.	Number of Furnaces for Gold melting or retorting.	Number of Furnaces for Assay Purposes.	Number of Plants for Cyanide Process.	Number of Concentrating Plants.	Driven by Steam-power.	Driven by Water-power or Hand-power. W.	H.
Thames County—ctd.																	
Thames Borough ..	Cambria ..	New Moanataiari Gold-mining Co.	..	21	..	13	1	..	2	5	1	..	..	..	..	1	0
" ..	Waiotahi ..	Waiotahi Gold-mining Co.	..	21	..	5	..	..	2	2	1	..	..	..	..	1	0
" ..	Fame and Fortune	E. K. Cooper	..	21	..	16	..	..	1	1	1	..	..	..	..	1	0
" ..	Hauraki Golden Age	Hauraki Golden Age Syndicate	2	40	..	13	..	..	..	..	..	..	..	..	..	..	
" ..	School of Mines ..	F. B. Allen	..	2	..	1	1	1	3	3	1	4	1	..	..	1	0
" ..	Bank of New South Wales	Reginald Smith ..	..	..	..	..	..	..	1	..	1	1	..	..	..	0	1
" ..	Bank of New Zealand	A. Smith	..	..	..	..	..	..	2	..	1	3	..	..	..	0	1
" ..	May Queen Extended	May Queen Extended Gold-mining Co.	..	23	..	14	..	..	2	4	1	..	..	..	..	1	0
" ..	Fairmile ..	W. Manning	..	..	..	1	..	..	1	1	..	..	..	..	..	0	1
Ohinemuri County.																	
Paeroa	Bank of New Zealand	G. Burgess	1	..	..	..	..	..	2	1	1	1	..	..	..	0	1
Karangahake ..	Crown	New Zealand Crown Mines Co. (Ltd.)	2	60	..	1	..	..	2	2	1	1	1	..	..	1	0
" ..	Woodstock ..	Woodstock Gold-mining Co.	2	40	..	1	..	..	2	2	1	1	1	1	..	1	0
" ..	Talisman ..	Talisman Gold-mining Co.	1	20	*1	2	..	..	2	2	1	1	1	..	..	1	0
Owharoa	Smile of Fortune..	Ohinemuri Syndicate ..	..	15	..	2	..	..	1	2	1	..	..	..	..	1	0
Komata	Komata.. ..	Komata Reefs Gold-mining Co.	2	20	..	4	..	..	2	2	1	1	1	1	1	1	0
Waitekauri ..	Waitekauri ..	Waitekauri Gold-mining Co.	2	40	*1	6	..	..	3	1	4	2	1	1	1	1	0
" ..	Golden Cross ..	Ditto	1	10	..	2	..	..	2	2	1	1	1	..	1	..	
" ..	Jubilee	Jubilee Syndicate ..	..	10	..	5	2	1	1	2	1	1	1	..	1	..	
" ..	Grace Darling ..	Grace Darling Gold-mining Co.	..	10	..	3	..	..	1	2	1	1	1	..	1	..	
" ..	Mangakara ..	Reginald Smith ..	..	9	..	3	..	..	1	2	..	..	..	..	..	1	0
" ..	Alpha	Alpha Gold-mining Co...	1	20	..	..	..	..	1	1	1	1	1	..	1	..	
Maratoto	Waitekauri Extended	Waitekauri Extended Gold-mining Co.	1	40	..	3	..	..	2	2	1	1	1	..	..	1	0
" ..	Maratoto ..	Maratoto Gold-mining Co.	..	10	..	2	2	..	2	1	1	1	1	..	1	..	
" ..	Hikutaia Gold	Hikutaia Gold Syndicate	1	..	1	3	..	..	1	1	1	1	1	..	1	..	
Waihi	Waihi	Waihi Gold-mining Co. ..	2	90	..	1	..	..	3	6	1	1	1	..	1	1	0
Waikino	Victoria	" ..	2	100	..	6	..	..	1	2	2	..	1	..	..	1	0
Waihi	Union Waihi ..	Union Waihi Gold-mining Co.	2	40	..	2	..	..	2	2	1	1	1	..	1	1	0
Piako County.																	
Waiorongomai ..	Te Aroha Gold-mining Co.	E. H. Hardie	1	10	..	2	..	..	1	1	1	1	..	1	..	1	0
" ..	Great Western ..	Great Western Co. ..	..	8	..	1	..	..	1	1	..	..	..	..	1	..	
City of Auckland ..	Bank of New Zealand	Bank of New Zealand ..	..	..	..	..	1	1	2	6	4	2	..	..	..	0	1
" ..	Fraser's	George Fraser and Sons	..	..	1	1	2	2	2	2	1	1	..	..	1	..	
Te Aroha.. ..	Montezuma ..	Rev. Joseph Campbell ..	1	..	..	1	1	..	1	1	..	..	..	..	1	..	
			30	1,235	8	294	29	17	119	135	69	44	27	9	36	46	7

* Krupp machines.

BATTERIES IN COURSE OF CONSTRUCTION.

Locality.	Name of Company.	Number of Stamps.	Remarks.
Coromandel County.			
Coromandel	School of Mines	5	
Kuaotunu	Handsworth Mine.. ..	3	
Waikoromiko	Forest Queen Mine ..	10	
Thames County.			
Whangamata	Whangamata Proprietary ..	..	1 Krupp mill, equal to 12 stamps.*
"	Wentworth Mine	..	1 Lamberton mill, &c., equal to 15 stamps.*
"	Chelmsford Mine	10	
Thames	Ethel Reefs Mine	20	
Ohinemuri County.			
Waikino	Waihi Gold-mining Company	100	
Karangahake	New Zealand Crown Company	20	
"	New Zealand Talisman Company	50	
Great Barrier.			
Great Barrier	Great Barrier Gold- and Silver-mining Company ..	20	
		238	

* Equal to 27 stamps.

STATEMENT showing the Whole of the QUARTZ-CRUSHING MACHINES and APPLIANCES for TREATING AURIFEROUS ORES in the MARLBOROUGH, NELSON, and WEST COAST MINING DISTRICTS for the Year 1899–1900.

Locality where Machine is situated.	Name of Machine.	Name of Owner.	Number of Rock-breakers.	Number of Stamps.	Number of Ore-crushers.	Number of Berdans.	Number of Pans.	Number of Settlers.	Number of Mortars.	Number of Retorts.	Number of Furnaces for Gold-melting.	Number of Furnaces for Assay Purposes.	Number of Plants for Cyanide Process.	Number of Concentrating Plants.	Driven by Steam-power.	Driven by Water-power or Hand-power.
Marlborough County.																W. H.
Top Valley	Jubilee	Jubilee Gold-mining Co.	..	10	..	1	..	..	..	1	..	..	..	..	1	..
Collingwood County.																
West Wanganui, or Taitapu	Taitapu	Taitapu-Gold-mining Co.	2	20	..	4	..	1	1	2	1	1	..	..	..	1 0
Ditto	Golden Blocks	Golden Blocks Gold-mining Co.	..	8	..	..	..	1	1	*2	..	..	..	..	1	..
Greymouth County.																
Paparoa Ranges	Taffy	Taffy Gold-mining Co.	..	5	..	1	..	..	..	1	..	..	..	..	..	1 0
"	Crœsus (Paparoa)	Crœsus (Paparoa) Gold-mining Co.	..	10	..	1	..	..	1	1	..	..	..	..	..	1 0
Lower Paparoas	Julian	Julian Gold-mining Co.	..	5	..	..	..	..	1	1	..	..	..	..	..	1 0
Buller County.																
Lyell	Alpine Extended	Alpine Extended Gold-mining Co.	..	20	..	4	..	1	1	2	..	..	1	..	..	1 0
"	Crœsus	Crœsus Syndicate	..	10	..	2	..	..	1	1	..	..	..	..	..	1 0
Stony Creek, Westport	Britannia	Britannia Gold-mining Co.	..	2	..	..	..	..	..	..	..	..	..	..	..	1 0
Waimangaroa, "	Republic†	Republic Gold-mining Co.	..	10	..	2	..	..	2	2	..	..	..	..	..	1 0
Inangahua County.																
Reefton	Globe (old mill)	Progress Mines of New Zealand	..	20	..	..	..	..	..	..	..	..	..	..	..	..
"	Progress (new mill)‡	Ditto	3	65	..	1	..	..	2	2	1	1	..	1	..	1 0
"	Wealth of Nations	Consolidated Goldfields of New Zealand	..	20	..	1	..	..	2	2	..	..	1	..	..	1 0
"	Keep-it-Dark	Keep-it-Dark Gold-mining Co.	..	20	..	4	..	1	1	2	..	..	1	1	..	1 0
Merrijigs	Golden Lead§	Golden Lead Gold-mining Co.	..	10	..	..	..	..	..	1	..	..	..	..	..	1 0
"	Cumberland	Cumberland Gold-mining Co.	..	10	..	1	..	..	2	1	..	..	1	..	..	1 0
"	Sir Francis Drake	Sir Francis Drake Syndicate	..	10	..	1	..	..	1	1	..	..	..	..	1	..
"	Last Chance	Last Chance Syndicate	..	5	..	..	..	..	1	1	..	..	..	..	1	..
Big River	Big River	Big River Gold-mining Co.	..	10	..	4	..	..	2	2	1	1	1	..	..	1 0
"	King George	St. George	..	5	..	..	..	..	1	1	..	..	..	..	..	1 0
Capleston	Welcome	Consolidated Goldfields of New Zealand	..	10	..	2	..	..	1	2	..	..	..	..	..	1 0
Bourke's Creek	Gardiner's	W. P. Gardiner and Sons	..	..	..	12	..	..	1	2	..	..	..	..	..	1 0
			5	285	..	31	..	4	22	30	3	3	5	2	4	17 0

* The gold from the retort is placed in the crucible and operated on in the smith's fire. † Not at work. ‡ One chlorination plant § Not at work.

BATTERIES IN COURSE OF CONSTRUCTION.

Locality.	Name of Company.	Number of Stamps.	Remarks.
Inangahua County	Consolidated Goldfields of New Zealand	25	Fraser and Chalmers self-feeders; steam-power.
Reefton	New Inkerman Mines	30	Old mill rebuilt, with self-feeders; steam-power.
Totals		55	

RETURN of STONE, ETC., CRUSHED—AUCKLAND DISTRICT.

District.	Quartz and Mullock crushed or sold.	Yield of Gold or Bullion.	Average Yield of Gold or Bullion per Ton.
	Tons.	Oz.	Oz. dwt. gr.
Coromandel—			
Output for 10 years previous to 1st April, 1890	15,101	56,232	3 14 11
1st April, 1890, to 31st March, 1891 ...	5,650	9,838	1 14 19
" 1891, " 1892 ...	13,029	12,191	0 18 17
" 1892, " 1893 ...	15,163	12,954	0 17 2
" 1893, " 1894 ...	12,629	9,969	0 15 18
" 1894, " 1895 ...	15,451	22,632	1 9 18
" 1895, " 1896 ...	27,439	48,378	1 15 6
" 1896, " 1897 ...	18,848	35,886	1 18 2
" 1897, " 1898 ...	13,666	27,428	2 0 3
" 1898, " 1899 ...	12,269	20,139	1 12 18
" 1899, " 1900 ...	22,806	22,086	0 19 8
Totals	172,051	277,733	1 12 10
Thames—			
Output for 12 years previous to 1st April, 1890	441,388	556,878	1 5 6
1st April, 1890, to 31st March, 1891 ...	61,756	38,113	0 12 8
" 1891, " 1892 ...	86,150	45,735	0 10 15
" 1892, " 1893 ...	78,547	31,336	0 7 23
" 1893, " 1894 ...	62,444	34,637	0 11 2
" 1894, " 1895 ...	48,464	22,810	0 9 10
" 1895, " 1896 ...	44,342	26,332	0 11 21
" 1896, " 1897 ...	27,061	13,440	0 9 22
" 1897, " 1898 ...	20,850	13,482	0 12 22
" 1898, " 1899 ...	31,339	18,004	0 11 11
" 1899, " 1900 ...	36,156	33,681	0 18 15
Totals	938,497	834,448	0 17 19
Ohinemuri—			
1st April, 1887, to 31st March, 1888 ...	2,388	3,406	1 8 13
" 1888, " 1889 ...	3,795	3,679	0 19 9
" 1889, " 1890 ...	4,773	8,564	1 15 21
" 1890, " 1891 ..	9,902	12,914	1 6 2
" 1891, " 1892 ...	13,865	23,659	1 14 2
" 1892, " 1893 ...	22,771	43,405	1 18 3
" 1893, " 1894 ...	31,281	35,666	1 2 18
" 1894, " 1895 ...	51,058	110,628	2 3 8
" 1895, " 1896 ...	57,008	147,499	2 11 18
" 1896, " 1897 ...	66,985	148,626	2 4 9
" 1897, " 1898 ...	105,126	280,708	2 13 9
" 1898, " 1899 ...	170,881	459,651	2 15 19
" 1899, " 1900 ...	212,282	489,276	2 6 2
Totals	752,115	1,767,681	2 7 0
Te Aroha—			
1st April, 1883, to 31st March, 1884 ...	4,262	4,629	1 1 17
" 1884, " 1885 ...	11,042	9,506	0 17 5
" 1885, " 1886 ...	6,552	4,489	0 13 17
" 1886, " 1887 ...	4,743	3,658	0 15 10
" 1887, " 1888 ...	7,166	2,918	0 8 3
" 1888, " 1889 ...	1,381	1,113	0 16 3
" 1889, " 1890 ...	4,894	20,416	4 3 10
" 1890, " 1891 ...	280	557	1 19 18
" 1891, " 1892 ...	2,722	979	0 7 5
" 1892, " 1893 ...	3,169	1,178	0 7 2
" 1893, " 1894 ...	2,270	833	0 7 8
" 1894, " 1895 ...	1,121	628	0 11 5
" 1895, " 1896 ...	172	168	0 19 12
" 1896, " 1897 ...	934	376	0 8 1
" 1897, " 1898 ...	...	...	...
" 1398, " 1899 ...	325	279	0 17 4
" 1899, " 1900 ...	1,008	753	0 14 22
Totals	52,041	52,470	1 0 4
Great Barrier—			
1st April, 1896, to 31st March, 1897 ...	3	219	73 0 0
1897, " 1898 ...	2	45	22 10 0
1898, " 1899 ...	...	...	...
" 1899, " 1900 ...	38	134	3 10 12
Totals	43	398	9 5 3
Grand totals from North Island ...	1,914,747	2,932,730	1 9 17

BATTERY RETURNS from QUARTZ MINES in the HAURAKI MINING DISTRICT for the Year ended 31st March, 1900.

Locality and Name of Mine.	Average Number of Men employed—Wages-men or Owners.	Quartz crushed.	Gold obtained.		Estimated Value of Gold or Bullion.
			Amalgamation.	Cyanide.	
GREAT BARRIER.					
Great Barrier Gold and Silver Mining Co.	3	Tons cwt. lb. 38 0 0	Oz. dwt. gr. ..	Oz. dwt. 134 8	£ s. d 127 17 10
COROMANDEL COUNTY.					
Kennedy Bay—					
Rose Claim	2	10 0 0	54 15 0	..	150 11 3
Hataranga Sluicing Claim	3	500 0 0	5 0 0	..	16 17 6
	5	510 0 0	59 15 0	..	167 8 9
Waikoromiko—					
Four-in-hand	21	993 0 0	2,194 8 12	..	6,345 19 9
Lillias	2	1 0 0	41 9 0	..	124 7 0
Forest Queen	5	1 10 0	75 16 0	..	211 16 4
	28	995 10 0	2,311 13 12	..	6,682 3 1
Tokatea—					
Royal Oak	55	1,041 0 0	2,001 13 0	..	5,117 3 6
Hauraki Associated	20	99 10 0	674 5 0	..	1,912 18 7
Tokatea Consols	4	9 5 0	31 12 0	..	91 7 9
West Tokatea	7	17 0 0	36 6 0	..	103 12 0
Tongariri	2	16 10 0	91 3 0	..	241 3 2
Queen of the North	3	3 5 0	17 16 0	..	51 3 6
Harbour View	5	3 0 0	46 10 0	..	130 8 11
Try Again	1	13 10 0	5 8 0	..	15 18 1
Hauraki Gem	2	1 15 0	49 15 0	..	139 16 0
	99	1,204 15 0	2,954 8 0	..	7,803 11 6
Kapanga—					
Kapanga	51	626 10 0	1,346 7 0	..	3,868 7 6
Scotty's	24	97 0 0	558 15 0	..	1,613 11 3
Buffalo	2	6 0 0	48 0 0	..	147 5 0
New Hauraki Gold Properties	17	16 0 0	73 0 0	..	211 14 0
	94	745 10 0	2,026 2 0	..	5,840 17 9
Kauri Block—					
Hauraki	105	2,095 0 0	4,387 12 0	..	13,315 3 8
Golden Pah	27	60 0 0	164 17 0	..	516 0 7
Bunker's Hill	13	42 0 192	356 14 0	..	1,108 6 7
Hauraki South	7	33 0 0	16 17 0	..	51 18 8
Welcome Find	3	1 3 0	30 12 18	..	89 2 3
Trig. Hill	2	2 0 0	6 0 0	..	18 12 0
	157	2,233 3 192	4,962 12 18	..	15,099 3 9
Tiki—					
Progress Castle Rock	7	0 0 420	69 1 0	..	190 15 0
Pohutu	2	3 0 0	13 6 0	..	35 0 8
Pukewau	1	0 0 68	2 12 0	..	7 9 6
	10	3 0 488	84 19 0	..	233 5 2
Opitonui—					
Kauri Freehold Estate	238	14,439 0 0	..	7,466 10	18,422 15 7
Kuaotunu—					
Mariposa	16	1,292 0 0	..	719 0	1,620 4 6
Irene	7	795 0 0	..	446 0	1,167 13 0
Great Mercury	7	284 0 0	..	127 11	262 1 1
Juno	4	12 0 200	271 14 0	..	611 16 10
Handsworth	2	0 0 220	60 2 0	..	149 7 6
	36	2,383 0 420	331 16 0	1,292 11	3,811 2 11
Sundries	..	292 2 0	596 2 12	..	795 14 7
Totals	667	22,806 9 92	13,327 8 18	8,759 1	58,856 3 2
THAMES COUNTY.					
Tapu—					
Mahara Royal	47	3,792 0 0	1,051 10 0	..	3,207 2 6
Bullion	11	176 0 0	389 15 12	..	1,210 12 6
Royal Star	1	14 0 0	5 18 0	..	18 5 9
	59	3,982 0 0	1,447 3 12	..	4,436 0 9

STATEMENT SHOWING QUANTITY OF QUARTZ CRUSHED AND GOLD OBTAINED for the Year ended 31st March, 1900—*continued*.

Locality and Name of Mine.	Average Number of Men employed—Wages-men or Owners.	Quartz crushed.	Gold obtained.		Estimated Value of Gold or Bullion.
			Amalgamation.	Cyanide.	
THAMES COUNTY—*continued*.					
		Tons cwt. lb.	Oz. dwt. gr.	Oz. dwt.	£ s. d.
Waiomo—					
Monowai	20	364 0 0	610 13 0	..	457 15 8
Tararu—					
Tararu Creek	110	16,088 0 0	..	8,127 7	16,313 14 8
Chicago	1	4 14 0	3 2 0	..	8 0 2
Eclipse	42	890 0 0	532 10 0	..	1,495 18 10
	153	16,982 14 0	535 12 0	8,127 7	17,817 13 8
Kuranui—					
Kuranui	12	138 0 0	63 9 0	..	162 17 7
Moanataiari—					
Moanataiari	74	1,659 0 0	2,670 13 12	..	7,337 17 8
New Alburnia	14	40 0 0	10 13 0	..	27 8 6
Kuranui-Caledonian	65	472 0 0	2,787 17 0	..	7,711 11 10
Tudor	2	8 0 0	5 0 0	..	13 10 0
	155	2,179 0 0	5,474 3 12	..	15,090 8 0
Waiotahi—					
Waiotahi	16	955 0 0	1,493 1 0	..	4,110 19 5
Fame and Fortune	26	860 0 0	699 5 0	..	1,889 8 3
Little Muriel	2	28 0 10	13 6 0	..	38 1 8
Ballarat	2	9 0 0	7 13 0	..	21 7 9
Golden Drop	2	10 0 0	53 7 0	..	134 9 10
	48	1,862 0 10	2,266 12 0	..	6,194 6 11
Grahamstown—					
Victoria	5	261 0 0	127 15 0	..	346 5 0
Judd's*	7	..	992 14 0	..	2,630 13 4
	..	13 0 0	13 2 0		
	12	274 0 0	1,133 11 0	..	2,976 18 4
Waiokaraka—					
May Queen	97	2,708 0 0	3,641 7 12	..	9,284 4 9
Thames-Hauraki	60	9 0 0	5 5 0	..	13 18 11
	157	2,717 0 0	3,646 12 12	..	9,298 3 8
Karaka—					
Adelaide	3	24 0 0	7 7 0	..	20 6 0
May Queen Extended	5	30 0 0	10 12 0	..	29 11 9
Karaka (Limited)	13	40 0 0	17 1 0	..	50 6 0
Claremont	1	0 0 196	102 0 0	..	275 8 0
Gloucester	1	7 0 0	4 2 0	..	12 9 0
	23	101 0 196	141 2 0	..	388 0 9
Una Hill—					
Occidental	4	52 0 0	27 5 0	..	74 6 5
Thames Special	3	34 0 0	14 8 0	..	39 11 8
	7	86 0 0	41 13 0	..	113 18 1
Hape Creek—					
Fortuna	13	514 0 0	116 8 0	..	251 2 3
Ethel Reefs	7	374 0 0	116 3 0	..	303 3 8
Weymouth	2	11 0 0	10 14 0	..	29 18 8
	22	899 0 0	243 5 0	..	584 4 7
Kerikeri—					
Horse-shoe	6	54 0 0	139 18 0	..	384 14 5
Puriri—					
Lucky Chance	7	207 0 0	59 3 0	..	131 18 0
Miner's Right	4	92 0 0	137 5 0	..	350 15 1
Manvoline	7	22 0 0	4 16 0	..	10 19 6
	18	321 0 0	201 4 0	..	493 12 7
Omahu—					
Sheet Anchor	6	33 0 0	291 0 0	..	202 8 5
Klondike	3	4 10 0	4 13 0	..	10 14 9
	9	37 10 0	295 13 0	..	213 3 2

* Tailings, 8,152 tons.

STATEMENT SHOWING QUANTITY OF QUARTZ CRUSHED AND GOLD OBTAINED for the Year ended 31st March, 1900—*continued.*

Locality and Name of Mine.	Average Number of Men employed Wages-men or Owners.	Quartz crushed.	Gold obtained.		Estimated Value of Gold or Bullion.
			Amalgamation.	Cyanide.	
THAMES COUNTY—*continued.*					
		Tons cwt. lb.	Oz. dwt. gr.	Oz. dwt.	£ s. d.
Whangamata—					
Luck at Last	115	5,495 0 0	8,605 0 0	..	10,610 13 4
Mercia	1	20 0 0	17 17 0	..	35 4 5
	116	5,515 0 0	8,622 17 0	..	10,645 17 9
Gumtown—					
Welcome Jack	4	5 0 0	345 15 0	..	506 8 0
Kapowai No. 1	2	2 15 0	18 10 0	..	47 11 7
Big Beetle	5	10 0 0	70 3 0	..	196 2 0
	11	17 15 0	434 8 0	..	750 1 7
Sundries	10	625 11 0	255 18 0	..	356 17 5
Totals	838	36,155 11 94	25,553 14 12	8,127 7	70,364 14 11
OHINEMURI COUNTY.					
Waihi—					
Waihi Gold-mining Company	740	112,501 0 0	..	295,308 0	316,408 2 8
Waihi-Silverton	70	9,384 0 0	..	6,828 3	13,724 16 0
	810	121,885 0 0	..	302,136 3	330,132 18 8
Waitekauri—					
Waitekauri Gold-mining Company	345	27,402 0 0	..	74,531 0	80,468 14 7
Jubilee	15	1,081 0 0	..	681 0	1,644 18 1
Grace Darling	30	295 0 0	..	96 15	120 18 9
Alpha	8	965 0 0	..	652 8	710 17 11
	398	29,743 0 0	..	75,961 3	82,945 9 4
Karangahake—					
New Zealand Crown Gold-mining Company	230	33,171 0 0	..	37,455 15	71,185 12 9
Woodstock Crown Gold-mining Company	114	11,454 0 0	..	19,931 2	13,500 2 10
New Zealand Talisman Gold-mining Company	105	9,585 0 0	..	45,795 10	33,028 14 4
	449	54,210 0 0	..	103,182 7	117,714 9 11
Komata—					
Komata Reefs	51	1,940 0 0	..	4,409 17	6,614 15 6
Wharekiraupunga—					
Royal Standard	2	14 0 0	..	18 10	24 14 10
Maratoto—					
Waitekauri Extended	40	2,751 0 0	..	2,997 13	3,002 9 1
Maratoto United	11	1,739 0 0	..	570 0	650 13 5
	51	4,490 0 0	..	3,567 13	3,653 2 6
Totals	1,761	212,282 0 0	..	489,275 13	541,085 10 9
PIAKO COUNTY.					
Wairongomai—					
Empire and New Find	10	1,006 0 0	738 16 0	..	1,974 4 2
Alexandra	2	2 0 0	13 17 0	..	45 1 3
Totals	12	1,008 0 0	752 13 0	..	2,019 5 5
Grand totals, 1900	3,281	272,290 1 74	39,633 15 0	506,296 9	672,453 12 1
" 1899	2,956	214,815 2 90	35,772 10 0	462,301 14	575,642 2 8
Increase for 1900	325	57,474 18 96	3,861 5 0	43,994 15	97,811 9 5

Number of men employed on development-work in the whole district from which no returns of gold have been obtained, 330.

BATTERY RETURNS from QUARTZ-MINES in the MARLBOROUGH, NELSON, and WEST COAST MINING DISTRICTS, for the Year ending 31st March, 1900.

Name of Mine.	Quartz Crushed.	Yield of Gold.	Approximate Total Values.
	Tons.	Oz. dwt. gr.	£ s. d.
Collingwood District—			
Golden Blocks	649	2,170 0 0	8,465 0 0
Westport District—			
Britannia	136	55 17 21	220 15 6
Cement Crushings	..	217 10 0	870 10 0
Lyell District—			
Alpine Extended	19,360	4,406 7 6	15,292 6 10
Reefton District—			
Progress Mines	46,001	22,378 1 3	80,996 8 2
Wealth of Nations	2,702	1,003 5 12	4,034 9 11
Keep-it-Dark	16,660	3,783 16 13	13,412 4 6
Sir Francis Drake	1,237	304 14 21	1,206 12 10
Last Chance	490	210 9 12	846 18 0
Big River	1,225	1,564 10 12	6,756 8 11
Cumberland	861	203 7 9	568 9 0
Gardiner and Son	..	92 0 12	368 2 0
Paparoa Ranges—			
Crœsus-Paparoa	1,092	865 0 16	3,503 11 2
Julian	283	189 1 12	745 6 4
Taffy	275	153 0 0	618 1 10
Totals	90,971	37,597 4 3	137,905 5 0
Estimated value for 1899			109,019 2 10
Increase for 1900			£28,886 2 2

BATTERY RETURNS from QUARTZ-MINES in the OTAGO AND SOUTHLAND MINING DISTRICTS for the Year ending 31st March, 1900.

Name of Company.	Quartz crushed.	Yield of Gold.	Approximate Value.
	Tons cwt. qr.	Oz. dwt. gr.	
Achilles Goldfields (Limited), Bullendale	1,222 0 0	796 19 1	
Glenrock Consolidated (Limited), Macetown ...	2,030 0 0	1,356 18 16	
Ditto, tailings...	42 10 0	68 10 0	
Morning Star Gold-mining Company, Preservation Inlet	1,033 10 0	432 2 0	
Alpha Quartz-mine, Preservation Inlet	446 0 0	22 15 0	
Golden Site Extended Gold-mining Company (Limited), Preservation Inlet	274 10 0	55 7 0	
Cromwell Proprietary Gold-mining Company (Limited), Bendigo	500 0 0	308 11 21	
Lawrence Brothers, Bannockburn	291 0 0	139 10 12	
James Lawrence, Bannockburn	311 10 0	114 12 0	£21,777
F. W. Gray, Bald Hill Flat	244 0 0	221 15 6	
R. T. Symes, Bald Hill Flat	70 0 0	51 0 0	
Bonanza (Beal and Peterson), Macraes	593 0 0	239 17 0	
W. and G. Donaldson (Golden Point), Macraes ...	1,800 0 0	381 13 1	
H. N. Mills and Sons, Macraes	1,274 0 0	399 12 15	
F. H. Perry, Rough Ridge	10 0 0	12 10 0	
O.P.Q. (Waipori) Gold-mines (Limited), Waipori ...	3,493 0 0	851 6 13	
Mount Highlay Syndicate, Hyde	665 9 0	73 10 12	
Canada Reefs, *viâ* Milton	312 0 0	40 5 0	
Bella Reefs, Waipori	200 0 0	32 1 0	
Totals	14,812 9 0	5,598 17 0	21,777
Estimated value for 1899			38,493
Decrease for 1900			£16,716

COMPARATIVE STATEMENT of RETURNS of QUARTZ CRUSHED and GOLD WON for ALL DISTRICTS for Years ending 31st March, 1899 and 1900.

Mining District.	1899.	1900.	Increase.	Decrease.
	£	£	£	£
Hauraki	575,642	672,454	96,812	...
Marlborough, Nelson, and West Coast	109,019	137,905	28,886	...
Otago and Southland ...	38,493	21,777	...	16,716
Totals	723,154	832,136	108,982	...

GROSS TOTALS and VALUE of GOLD PURCHASED by BANKS for Year ending 31st March, 1900.

Bank.	Gold won.	Value.
Hauraki Mining District.		
	Oz. dwt. gr.	£ s. d.
Bank of New Zealand	140,040 0 0	188,705 14 9
Bank of New South Wales	5,082 0 0	12,596 10 4
National Bank of New Zealand ...	15,965 0 0	27,939 13 1
Totals	159,087 0 0	229,241 18 2
Marlborough, Nelson, and Westland Mining Districts.		
Bank of New Zealand	34,574 9 13	135,386 9 1
Bank of New South Wales	14,163 17 3	65,819 2 5
National Bank of New Zealand ...	17,979 3 9	67,177 11 8
Union Bank of Australia	1,436 0 0	5,669 0 0
Private buyers	333 5 23	1,226 2 8
Totals	68,486 16 0	275,278 5 10
Otago and Southland Districts.		
Bank of New Zealand	88,385 8 1	340,186 1 0
Bank of New South Wales	23,634 8 9	91,259 19 1
National Bank of New Zealand ...	25,223 17 2	98,644 7 10
Bank of Australasia	2,597 6 0	10,261 17 8
Totals	139,840 19 12	540,352 5 7
Grand totals	367,414 15 12	1,044,872 9 7

SUMMARY OF WORKS CONSTRUCTED.

The following statement shows the whole of the different classes of works constructed by the department, either by direct grants or by subsidies to local bodies, during the last eighteen years (the votes for this purpose having been under the control of the Hon. the Minister of Mines), for the purpose of opening up the mineral belts throughout the colony, and also for the development of the mining industry:—

Nature of Works.	Total Cost of Construction, or Amount authorised to be expended.	Expenditure, by way of Subsidy or otherwise, by Mines Department.	Amount of Liability by Mines Department on Works in Progress.
UP TO YEARS 1882–83 AND 1883–84.	£ s. d.	£ s. d.	£ s. d.
Water-races	29,252 1 11	14,853 9 5	14,398 11 6
Roads on goldfields	21,437 11 2	13,089 16 0	8,347 15 2
Roads and tracks undertaken by County Councils, subsidised by Mines Department	52,841 17 0	21,844 16 7	10,207 15 9
Works undertaken by prospecting associations, subsidised by Mines Department	13,216 13 4	3,350 0 0	3,400 0 0
Construction of drainage- and sludge-channels, subsidised by Mines Department	5,750 0 0	2,468 15 4	781 4 8
	122,498 3 5	55,606 17 4	37,135 7 1
1884–85.			
Water-races	4,846 1 9	14,596 2 9	4,648 11 6
Roads on goldfields	13,667 10 1	9,630 9 6	12,384 15 9
Roads and tracks undertaken by County Councils, subsidised by Mines Department	13,566 14 1	6,293 16 6	12,739 17 6
Roads to mines, other than gold, subsidised by Mines Department	4,594 10 0	111 19 0	2,888 1 0
Works undertaken by prospecting associations, subsidised by Mines Department	850 0 0	108 0 0	3,692 0 0
Construction of drainage- and sludge-channels, subsidised by Mines Department	4,050 0 0	1,050 0 0	1,931 4 8
Diamond and other drills	3,600 0 0	1,858 0 0	..
	45,174 15 11	33,648 7 0	38,284 10 5
1885–86.			
Water-races	3,660 4 9	6,063 2 3	6,964 4 4
Roads on goldfields	27,543 18 8	12,360 14 9	27,567 19 8
Roads undertaken by County Councils, subsidised by Mines Department	14,773 2 3	13,043 15 9	12,477 9 2
Roads to mines, other than gold, subsidised by Mines Department	1,551 19 10	4,327 0 10	490 12 8
Works undertaken by prospecting associations, subsidised by Mines Department	11,860 18 0	1,999 5 7	6,389 5 9
Construction of drainage- and sludge-channels, subsidised by Mines Department	10,051 14 9	3,994 16 6	6,995 9 9
Schools of Mines	2,160 9 7	1,260 9 7	900 0 0
	71,602 7 10	43,049 5 3	61,785 1 4

SUMMARY OF WORKS CONSTRUCTED—*continued.*

Nature of Works.	Total Cost of Construction, or Amount authorised to be expended.	Expenditure, by way of Subsidy or otherwise, by Mines Department.	Amount of Liability by Mines Department on Works in Progress.
1886–87.	£ s. d.	£ s. d.	£ s. d.
Water-races	..	1,928 14 4	3,466 0 8
Roads on goldfields	12,453 3 5	22,229 16 1	17,791 7 0
Roads and tracks undertaken by County Councils, subsidised by Mines Department	12,613 4 8	7,415 19 6	10,455 1 5
Roads to mines, other than gold, subsidised by Mines Department	..	306 1 0	110 13 1
Works undertaken by prospecting associations and companies, subsidised by Mines Department	15,671 19 6	4,521 7 3	4,618 4 7
Construction of drainage- and sludge-channels, subsidised by Mines Department	5,549 14 6	6,207 18 0	672 6 10
Diamond and other drills	422 15 6	422 15 6	..
Schools of Mines	3,183 7 1	3,383 7 1	700 0 0
	49,894 4 8	46,415 18 9	37,813 13 7
1887–88.			
Water-races	6 6 6	6 6 6	..
Roads on goldfields	6,860 4 3	17,281 11 3	7,370 0 0
Roads and tracks undertaken by County Councils, subsidised by Mines Department	2,998 15 0	8,012 5 2	3,942 4 2
Roads to mines, other than gold, subsidised by Mines Department	..	14 5 4	..
Works undertaken by prospecting associations and companies, subsidised by Mines Department	6,456 8 0	2,703 19 3	924 8 0
Construction of drainage- and sludge-channels, subsidised by Mines Department	..	1,110 4 11	2,054 10 6
Schools of Mines	1,859 3 7	2,221 19 4	337 4 3
Aids to treatment of ores	1,200 0 0	390 18 3	209 1 9
	19,380 17 4	31,741 10 0	14,837 8 8
1888–89.			
Roads on goldfields	10,253 5 3	4,304 3 9	13,218 11 6
Roads and tracks undertaken by County Councils, subsidised by Mines Department	7,318 1 0	2,466 16 8	5,195 6 1
Works undertaken by prospecting associations and companies, subsidised by Mines Department	474 0 0	236 0 0	687 8 0
Construction of drainage- and sludge-channels, subsidised by Mines Department	..	54 10 6	..
Wharves, contributions by Mines Department	589 19 5	96 6 0	343 13 5
Aids to treatment of ores, subsidised	..	209 1 9	..
Schools of Mines	895 16 10	1,188 6 10	44 14 3
	19,531 2 6	8,555 5 6	19,489 13 3
1889–90.			
Roads on goldfields	3,834 9 7	9,148 5 9	8,005 5 4
Roads and tracks undertaken by County Councils, subsidised by Mines Department	8,507 15 8	3,451 17 11	5,928 1 3
Works undertaken by prospecting associations and companies, subsidised by Mines Department	..	..	663 0 0
Water-races	2,200 0 0	719 0 0	681 0 0
Wharves	..	150 0 0	193 13 5
Schools of Mines	1,040 0 8	1,034 0 11	50 14 0
Aids to treatment of ores	142 8 9	142 8 9	..
Tracks to open up mineral lands	1,000 0 0	207 3 6	792 16 6
Diamond drills	425 14 5	425 14 5	..
	17,150 9 1	15,278 11 3	16,314 10 6
1890–91.			
Roads on goldfields	8,811 14 4	10,815 14 8	5,201 5 0
Roads and tracks undertaken by County Councils, subsidised by Mines Department	2,703 5 0	2,252 5 5	5,027 8 4
Works undertaken by prospecting associations and companies, subsidised by Mines Department	..	..	663 0 0
Water-races	5,542 19 8	6,234 4 6	..
Wharves	..	39 9 9	..
Schools of Mines	3,847 10 0	3,898 4 0	..
Tracks to open up mineral lands	..	78 4 7	419 19 5
	20,905 9 0	23,319 2 11	11,311 12 9
1891–92.			
Roads on goldfields	14,226 5 1	8,460 0 3	11,767 9 10
Roads and tracks undertaken by County Councils, subsidised by Mines Department	3,162 0 0	1,720 18 6	4,937 10 2
Works undertaken by prospecting associations and companies, subsidised by Mines Department	1,455 5 5	336 15 9	1,663 0 0
Water-races	2,256 13 6	2,256 13 6	..
Wharves	..	..	..
Schools of Mines	1,370 19 9	1,370 19 9	..
Tracks to open up mineral lands	40 0 0	41 16 0	418 3 7
	22,511 3 9	14,187 3 9	18,786 3 7

SUMMARY OF WORKS CONSTRUCTED—*continued.*

Nature of Works.	Total Cost of Construction, or Amount authorised to be expended.	Expenditure, by way of Subsidy or otherwise, by Mines Department.	Amount of Liability by Mines Department on Works in Progress.
1892–93.	£ s. d.	£ s. d.	£ s. d.
Roads on goldfields	15,199 2 4	17,325 10 0	9,628 6 10
Roads and tracks undertaken by County Councils, subsidised by Mines Department	550 0 0	4,033 0 0	4,831 9 10
Works undertaken by prospecting associations and companies, subsidised by Mines Department	970 4 9	865 4 3	1,768 0 6
Water-races	3,811 1 10	3,811 1 10	..
Wharves	..	..	..
Schools of Mines	1,232 4 4	1,232 4 4	..
Tracks to open up mineral lands	..	..	419 19 5
Artesian-well boring, Maniototo Plains	550 0 0	281 3 6	268 16 6
	22,312 13 3	24,548 3 11	16,916 3 1
1893–94.			
Roads on goldfields	18,418 19 2	15,056 0 11	13,013 18 5
Roads and tracks undertaken by County Councils, subsidised by Mines Department	5,038 11 6	2,718 17 8	5,576 10 7
Works undertaken by prospecting associations and companies, subsidised by Mines Department	2,245 19 4	1,709 18 5	1,027 7 11
Water-races	5,271 17 1	5,271 17 1	900 0 0
Drainage-channels	..	..	1,000 0 0
Wharves	..	..	..
Schools of Mines	1,555 19 9	1,555 19 9	..
Tracks to open up mineral lands	..	..	..
Repairing flood damages	500 0 0	500 0 0	..
Artesian-well boring, Maniototo Plains	800 0 0	518 16 6	..
	33,831 6 10	27,331 10 4	21,517 16 11
1894–95.			
Roads on goldfields	20,908 13 7	15,160 3 5	18,752 10 7
Roads and tracks undertaken by County Councils, subsidised by Mines Department	685 18 4	2,295 9 2	1,934 5 7
Works undertaken by prospecting associations and companies, subsidised by Mines Department	10,805 15 4	2,378 13 2	3,006 13 0
Water-races	4,801 19 7	2,427 10 11	2,151 18 8
Drainage-channels	1,521 0 0	673 14 10	3,647 5 2
Wharves	..	..	..
Schools of Mines	999 8 6	999 8 6	..
Tracks to open up mineral lands	..	..	..
Repairing flood damages	..	..	..
Artesian-well boring, Maniototo Plains	505 19 11	505 19 11	..
Diamond drills	..	..	..
	40,228 15 3	24,440 19 11	29,492 13 0
1895–96.			
Roads on goldfields	14,554 0 7	19,970 6 6	14,086 4 8
Roads and tracks undertaken by County Councils, subsidised by Mines Department	4,614 11 1	1,607 8 6	4,290 16 11
Works undertaken by prospecting associations and companies, subsidised by Mines Department	3,477 7 0	1,726 4 8	10,093 3 0
Water-races	6,820 18 3	5,162 9 2	2,515 7 9
Drainage-channels	5,100 0 0	2,240 5 1	2,657 0 1
Wharves	..	..	..
Schools of Mines	999 3 0	999 3 0	..
Tracks to open up mineral lands	..	..	..
Repairing flood damages	..	..	..
Artesian-well boring, Maniototo Plains	..	..	..
Diamond drills	216 1 6	216 1 6	..
	35,782 1 5	31,921 18 5	33,642 12 5
1896–97.			
Roads on goldfields	57,685 9 6	30,720 12 7	35,622 15 3
Roads and tracks undertaken by County Councils, subsidised by Mines Department	11,677 0 0	1,759 6 5	4,079 18 3
Works undertaken by prospecting associations and companies, subsidised by Mines Department	1,570 7 3	1,533 6 7	2,915 14 3
Water-races	3,090 11 1	3,927 18 0	1,678 0 10
Drainage-channels	1,409 0 0	2,149 3 11	2,516 16 2
Wharves	..	..	..
Schools of Mines	1,682 19 5	1,682 19 5	..
Tracks to open up mineral lands	..	..	..
Repairing flood damage	..	..	..
Artesian-well boring, Maniototo Plains	..	..	..
Resumption of land	300 0 0	300 0 0	..
Prospecting deep levels	25,500 0 0	2,697 14 5	22,802 5 7
	102,915 7 3	44,771 1 4	69,615 10 4

SUMMARY OF WORKS CONSTRUCTED—*continued.*

Nature of Works.	Total Cost of Construction, or Amount authorised to be expended.	Expenditure, by way of Subsidy or otherwise, by Mines Department.	Amount of Liability by Mines Department on Works in Progress.
1897–98.	£ s. d.	£ s. d.	£ s. d.
Roads on goldfields	71,318 11 7	37,410 14 3	33,907 17 4
Roads and tracks undertaken by County Councils, subsidised by Mines Department	25,151 9 8	12,158 6 7	9,677 14 0
Works undertaken by prospecting associations and companies, subsidised by Mines Department	3,939 8 1	2,357 15 1	1,581 13 0
Water-races	3,275 8 9	2,272 5 0	1,003 3 9
Drainage-channels	4,481 14 0	1,212 14 9	3,268 19 3
Schools of Mines	1,780 17 3	1,780 17 3	..
Prospecting deep levels	25,500 0 0	21,520 15 0	1,281 10 7
Water-conservation	507 3 9	507 3 9	..
Construction of telephone-lines	60 0 0	50 0 0	..
Compensation proclamation of rivers	5,196 13 10	5,196 13 10	..
	141,211 6 11	84,467 5 6	50,720 17 11
1898–99.			
Roads on goldfields	48,201 0 2	42,358 8 6	39,825 9 0
Roads and tracks undertaken by County Councils, subsidised by Mines Department	21,025 12 0	4,191 7 9	5,914 7 5
Works undertaken by prospecting associations and companies, subsidised by Mines Department	2,936 11 8	2,143 14 1	1,103 13 1
Water-races	3,853 16 5	2,932 12 1	1,719 6 3
Drainage-channels	3,539 7 5	2,426 13 5	3,802 16 4
Schools of Mines	1,450 15 2	1,450 15 2	..
Prospecting deep levels	25,500 0 0	1,281 10 7	..
Water-conservation	12,483 13 1	7,893 19 4	..
Construction of telephone-lines	..	..	..
Compensation proclamation of rivers	676 0 8	676 0 8	..
	119,666 16 7	65,355 1 7	52,365 12 1
1899–1900.			
Roads on goldfields	46,442 15 10	44,258 2 6	42,010 2 4
Roads and tracks undertaken by County Councils, subsidised by Mines Department	4,625 0 0	2,865 7 4	5,011 0 11
Works undertaken by prospecting associations and companies, subsidised by Mines Department	2,549 7 2	1,400 9 6	1,784 3 0
Water-races	7,909 5 11	8,430 14 0	963 11 10
Drainage-channels	1,090 0 0	1,435 7 5	2,627 14 7
Schools of Mines	1,866 13 3	1,866 13 3	..
Prospecting deep levels	..	..	..
Water-conservation	6,925 10 9	6,925 10 9	..
Resumption of land	2,812 7 0	2,812 7 0	..
Compensation proclamation of rivers	811 0 0	811 0 0	..
Aid towards the treatment of ores	915 1 4	915 1 4	..
	75,947 1 3	71,720 13 1	52,396 12 8
SUMMARY.			
Roads on goldfields	371,158 0 5	329,147 18 1	42,010 2 4
Subsidised roads and tracks	168,483 13 3	95,564 8 0	5,011 0 11
Subsidised roads and tracks other than on goldfields	6,146 9 10	4,759 6 2	..
Prospecting	75,554 19 4	27,371 14 3	1,784 3 0
Water-races	84,577 11 10	80,894 1 4	963 11 10
Wharves	435 15 9	285 15 9	..
Schools of Mines	25,925 8 2	25,925 8 2	..
Drainage-channels	36,853 15 0	25,023 4 8	2,627 14 7
Diamond drills	5,170 11 4	3,428 11 4	..
Treatment of ores	2,257 10 1	1,657 10 1	..
Tracks to open up mineral lands	325 8 1	325 8 1	..
Artesian-well boring, Maniototo Plains	800 0 0	800 0 0	..
Repairing flood damages	500 0 0	500 0 0	..
Prospecting deep levels	51,000 0 0	25,500 0 0	..
Resumption of land	3,112 7 0	3,112 7 0	..
Water-conservation	16,433 12 6	15,326 13 10	..
Construction of telephone-lines	60 0 0	50 0 0	..
Proclamation of rivers	6,683 14 6	6,683 14 6	..
	855,478 17 1	646,356 1 3	52,396 12 8

LIST of WORKS on GOLDFIELDS undertaken wholly by the Mines Department, or by Subsidies to County Councils, Local Bodies, and Prospecting Associations, in Progress on the 31st March, 1900.

Locality and Nature of Works.	Total Cost, or Amount authorised.	Amount of Contribution paid by Mines Department.	Amount due by Mines Department on Works still in Progress.
NORTH ISLAND.			
ROADS (SUBSIDISED).			
Coromandel County.	£ s. d.	£ s. d.	£ s. d.
Road, Bridles Point, to Deepwater	300 0 0	170 0 0	80 0 0
Public crushing-plant, Coromandel School of Mines ..	1,050 0 0	..	700 0 0
Opitonui–Mercury Bay	200 0 0	..	100 0 0
Repairs, bridges, Kuaotunu Main Road	200 0 0	..	100 0 0
Cabbage Bay–Ward's Track	200 0 0	..	100 0 0
	1,950 0 0	170 0 0	1,080 0 0
Thames County.			
Townsend's Road	150 0 0	26 12 0	48 8 0
Hape Creek Road	200 0 0	..	100 0 0
Foot-bridge, Pepe Creek	300 0 0	..	150 0 0
	650 0 0	26 12 0	298 8 0
Thames Borough.			
Clearing *débris*, Karaka Creek and Waiotahi Aqueduct ..	275 0 0	..	255 0 0
Metalling Goldfields Roads	400 0 0	..	100 0 0
Repairs, Waiotahi Creek Bridge	50 0 0	..	25 0 0
	725 0 0	..	380 0 0
Ohinemuri County.			
Road running south on left-hand branch Waihou River ..	400 0 0	384 19 0	15 1 0
Kaimanawa Road	150 0 0	66 15 0	33 5 0
	550 0 0	451 14 0	48 6 0
Katikati Road Board.			
Te Aroha Track	50 0 0	19 18 9	5 1 3
Matamata Road Board.			
Repairing flood-damages	300 0 0	..	100 0 0
Piako County.			
Waihou River Bridge at Shaftesbury	580 0 0	..	290 0 0
MIDDLE ISLAND.			
ROADS (SUBSIDISED).			
Picton Road Board.			
Repairs, Kaituna–Tuamarina Road	100 0 0	34 0 0	16 0 0
Pelorus Road Board.			
Widening road to Golden Bar Mine	50 0 0	..	30 0 0
Collingwood County.			
Kaituna River protection-works	300 0 0	..	150 0 0
Collingwood Bridge	200 0 0	..	100 0 0
Motupipi Bridge	200 0 0	..	100 0 0
	700 0 0	..	350 0 0
Waimea County.			
Repairs, Motueka Bridge	1,000 0 0	469 14 4	280 5 8

LIST of WORKS on GOLDFIELDS, &c.—*continued.*

Locality and Nature of Works.	Total Cost, or Amount authorised.	Amount of Contribution paid by Mines Department.	Amount due by Mines Department on Works still in Progress.
Buller County.	£ s. d.	£ s. d.	£ s. d.
Stony Creek Road–Waimangaroa	400 0 0	..	200 0 0
Buller River Bridge, below Lyell	250 0 0	..	125 0 0
Virgin Flat Road	200 0 0	..	100 0 0
Orowaiti Bridge	200 0 0	..	100 0 0
Long Tunnel, Addison's	200 0 0	..	100 0 0
	1,250 0 0	..	625 0 0
Grey County.			
Road between Cape Terrace and Teremakau Bridge	50 0 0	..	25 0 0
River View Track	280 0 0	..	140 0 0
Wing to New River Bridge at Marsden	100 0 0	..	86 0 0
	430 0 0	..	251 0 0
Westland County.			
Improving road, Seven-mile, Taipo	150 0 0	45 16 6	29 3 6
Tuapeka County.			
Metalling, Lawrence–Waipori	550 0 0	341 3 6	8 16 6
Lake County.			
Road up Dart River	100 0 0	..	75 0 0
Skipper's Bridge	4,244 0 0	2,200 0 0	1,044 0 0
	4,344 0 0	2,200 0 0	1,119 0 0
Vincent County.			
Dairy Creek to Coal Pits	200 0 0	..	100 0 0
WORKS UNDER CONSTRUCTION WHOLLY BY MINES DEPARTMENT.			
Opitonui Township Road	100 0 0	..	100 0 0
Four-in-Hand Road	135 0 0	..	135 0 0
Whangamata Harbour to Wentworth Mine	100 0 0	..	100 0 0
Maratoto Road	100 0 0	..	100 0 0
Easing grade, Kahika Hill	50 0 0	..	50 0 0
Waiorongomai–Gordon	150 0 0	..	150 0 0
Cullensville–Waikakaho	25 0 0	..	25 0 0
Bridges, Dead Horse and Walker's Creeks	25 0 0	..	25 0 0
Foot-bridge, Wakamarina River	50 0 0	..	50 0 0
Wharton's Dam to Deep Creek	25 0 0	..	25 0 0
Black Creek Bridge	75 0 0	..	75 0 0
Kanieri River Bridge	30 15 0	..	30 15 0
Kawhaka Saddle Track	6 0 0	..	6 0 0
Dredging, Titri Canal	30 0 0	..	30 0 0
Piano Flat Company's Race Track	50 0 0	..	50 0 0
Repairs, Waikaia–Whitecomb	50 0 0	..	50 0 0
Thompson's Track	4,460 19 11	3,868 19 11	592 0 0
Cabbage Bay–Port Charles and Cape Colville	1,800 0 0	1,520 0 0	280 0 0
Tairua–Whenuakite	550 0 0	400 0 0	150 0 0
Coromandel–Cabbage Bay	700 0 0	600 0 0	100 0 0
Tokatea–Kennedy Bay	700 0 0	685 0 0	15 0 0
Coromandel–Kuaotunu, *viâ* Matarangi	1,200 0 0	770 0 0	430 0 0
Tiki–Kaimarama	700 0 0	525 0 0	175 0 0
Tiki–Manaia	895 13 0	695 13 0	200 0 0
Manaia–Waikawau	2,400 0 0	2,265 0 0	135 0 0
Mercury Bay–Whenuakite and Boat Harbour	400 0 0	350 0 0	50 0 0
Kuaotunu–Mercury Bay	1,050 0 0	976 0 0	74 0 0
Whitianga–Gumtown	250 0 0	200 0 0	50 0 0
Coromandel–Whangapoua	850 0 0	200 0 0	650 0 0
Kikowhakarere–Cabbage Bay	500 0 0	280 0 0	220 0 0
Extending Wharf Road, Coromandel	700 0 0	500 0 0	200 0 0
Bridge, Ring's Road	325 0 0	300 0 0	25 0 0
Whitianga–Kaimarama	150 0 0	90 0 0	60 0 0
Mahakirau Goldfield Road	100 0 0	50 0 0	50 0 0
Tiki–Te Koumu	150 0 0	84 0 0	66 0 0
Opitonui Road	370 0 0	200 0 0	170 0 0
Waiau Bridge to old mill-site	150 0 0	..	150 0 0
Donnelly's Bridge	150 0 0	..	150 0 0
Bridge and approaches, Sullivan's Creek	300 0 0	..	300 0 0
Ohuka Creek Bridge	200 0 0	..	200 0 0
Thames–Waikawau	2,127 11 7	1,892 11 7	235 0 0
Thames–Hikutaia	1,681 0 1	1,531 0 1	150 0 0
Upper Tararu Road	1,195 9 11	945 9 11	250 0 0

LIST of WORKS on GOLDFIELDS, &c.—*continued.*

Locality and Nature of Works.	Total Cost, or Amount authorised.	Amount of Contribution paid by Mines Department.	Amount due by Mines Department on Works still in Progress.
WORKS UNDER CONSTRUCTION WHOLLY BY MINES DEPARTMENT—*continued.*	£ s. d.	£ s. d.	£ s. d.
Tapu Creek and extension	1,206 1 11	1,006 1 11	200 0 0
Turua–Netherton	1,200 0 0	832 0 0	368 0 0
Hikutaia–Whangamata "Wires" Track	1,492 0 0	1,358 9 0	133 11 0
Matatoki Road	489 0 0	255 1 10	233 18 2
Wharepoa Settlement Road	853 7 5	592 7 5	261 0 0
Omahu–Whangamata	1,425 0 0	1,139 5 0	285 15 0
Matatoke outfall drain	100 0 0	37 10 0	62 10 0
Townsend's Road portion of Thames River–Whangamata Road	100 0 0	..	100 0 0
Puriri–Neavesville	250 0 0	..	250 0 0
Neavesville–Upper Landing	250 0 0	..	250 0 0
Upper Landing–Tairua	100 0 0	..	100 0 0
Railway-station roads	500 0 0	..	500 0 0
Waiomo Creek Road	200 0 0	..	200 0 0
Hikutaia–Waihi	3,125 0 0	2,507 6 6	617 13 6
Waitekauri–Golden Cross	1,539 15 0	1,054 15 0	485 0 0
Waihi–Whangamata	558 0 0	358 6 0	199 14 0
Paeroa–Te Aroha	532 0 0	445 12 8	86 7 4
Paeroa–Waitoa	1,485 13 4	1,135 13 4	350 0 0
Komata Reefs–Paeroa	500 0 0	300 0 0	200 0 0
Komata Reefs–Waitekauri	300 0 0	200 0 0	100 0 0
Hikutaia–Waitekauri	914 0 0	719 9 3	194 10 9
Waitekauri–Wharekiraupunga	298 8 6	98 8 6	200 0 0
Waitekauri Creek Bridge	160 0 0	102 15 0	57 5 0
Grace Darling Road	392 0 0	217 0 0	175 0 0
Roads, Netherton	345 0 0	200 0 0	145 0 0
Mangaiti and Waitoa Road and punt	150 0 0	85 11 9	64 8 3
Earl of Glasgow Claim Track	300 0 0	213 15 1	86 4 11
Waihi–Katikati	900 0 0	500 0 0	400 0 0
Papamoa–Te Puke	300 0 0	150 0 0	150 0 0
Tauranga–Te Puke	400 0 0	300 0 0	100 0 0
Tracks, Wakamarina and Mahakipawa	100 0 0	46 16 6	53 3 6
Havelock–Tuamarina	486 12 3	336 12 3	150 0 0
Onamalutu–Wakamarina	700 0 0	400 0 0	300 0 0
Rocky Ferry–Kaituna	600 0 0	..	600 0 0
Bartlett's Creek to Cat Point	200 0 0	188 1 2	11 18 10
Repairs, Kaituna Bridge	150 0 0	81 3 6	68 16 6
Tuamarina–Kaituna	150 0 0	65 0 0	85 0 0
Takaka–Collingwood Inland Road	2,279 0 0	1,803 8 1	475 11 11
Bonny Doon Road	1,225 0 0	985 13 7	239 6 5
Anatoki Track	150 0 0	95 3 0	54 17 0
Aorere Bridga	100 0 0	87 8 6	12 11 6
Vants to Bubu	100 0 0	50 0 0	50 0 0
Ferntown–Pakawau	300 0 0	172 14 4	127 5 8
Takaka Bridge protective works	150 0 0	..	150 0 0
Takaka Hill Road	150 0 0	..	150 0 0
Taitapu Boundary Track	200 0 0	..	200 0 0
Slate River Road	100 0 0	..	100 0 0
Takaka roads	400 0 0	..	400 0 0
Wangapeka–Baton	300 0 0	..	300 0 0
Lloyd's Valley Road Bridges	150 0 0	77 11 3	72 8 9
Thorpe to Churchill	200 0 0	..	200 0 0
Neudorf to Ngatimoti	100 0 0	79 16 8	20 3 4
Riwaka–Kaiteriteri	100 0 0	84 9 0	15 11 0
Canaan Road	300 0 0	250 18 8	49 1 4
Graham River Bridge	150 0 0	..	150 0 0
Glenrae–Tadmor	100 0 0	..	100 0 0
Brooklyn Valley Road	100 0 0	..	100 0 0
Thorpe–Neudorf	100 0 0	..	100 0 0
Chandler's–Wangapeka Junction	200 0 0	..	200 0 0
Millerton Road	500 0 0	300 0 0	200 0 0
Lyell Bridge–Ryan's	700 0 0	450 0 0	250 0 0
Wilson's Lead Road	650 0 0	450 0 0	200 0 0
Granity Creek southwards	700 0 0	450 0 0	250 0 0
Oparara River Road–Karamea	450 0 0	400 0 0	50 0 0
Bradshaw's Lead Road	200 0 0	100 0 0	100 0 0
Promised Land, Ohinahanu Creek	400 0 0	200 0 0	200 0 0
Land of Promise Road	250 0 0	150 0 0	100 0 0
Karamea Mud Flat Road	350 0 0	250 0 0	100 0 0
Mokihinui end of Westport Road	450 0 0	250 0 0	200 0 0
Fenian Creek Track	100 0 0	..	100 0 0
Karamea River Protective Works	200 0 0	..	200 0 0
Coalbrookdale–Cedar Creek	200 0 0	..	200 0 0
Grainger's Point Bridge	300 0 0	..	300 0 0
Fairdown to Beach	100 0 0	..	100 0 0
Charleston–Brighton	100 0 0	..	100 0 0
Nile River Bridge, Charleston	100 0 0	..	100 0 0
Brighton–Grey County boundary	500 0 0	..	500 0 0
Deadman's Creek, Brighton	150 0 0	..	150 0 0
Paparoa River Track	100 0 0	..	100 0 0
Murray Creek to Waitahu River	218 16 6	..	218 16 6
Reefton–Maruia	2,285 8 0	1,835 8 0	450 0 0

LIST of WORKS on GOLDFIELDS, &c.—*continued.*

Locality and Nature of Works.	Total Cost, or Amount authorised.	Amount of Contribution paid by Mines Department.	Amount due by Mines Department on Works still in Progress.
WORKS UNDER CONSTRUCTION WHOLLY BY MINES DEPARTMENT—*continued.*	£ s. d.	£ s. d.	£ s. d.
Capleston–Larry's	450 0 0	415 0 0	35 0 0
Glenroy–Maruia	520 0 0	220 0 0	300 0 0
Black's Point Road, widening	850 0 0	593 8 7	256 11 5
Big River–St. George	250 0 0	195 0 0	55 0 0
Mangles Valley Road	550 0 0	259 18 3	290 1 9
Blackwater–Big River	300 0 0	..	300 0 0
Ahaura Bridge	3,150 0 0	2,550 0 0	600 0 0
Brunnerton–Paparoa	100 0 0	..	100 0 0
Blackball–Paparoa	1,686 10 0	1,600 10 0	86 0 0
Waipuna Road	275 0 0	150 0 0	125 0 0
Cobden–Barrytown, repairs	1,400 0 0	1,084 0 0	316 0 0
Paroa–Teremakau	825 0 0	625 0 0	200 0 0
Coal Creek Bridge	400 0 0	130 16 0	269 4 0
Blackball Creek Bridge	400 0 0	..	400 0 0
Barrytown–Paparoa extension	200 0 0	..	200 0 0
Totara Flat Road	100 0 0	..	100 0 0
Dowling Creek Bridge	100 0 0	..	100 0 0
Granite Creek Bridge	100 0 0	..	100 0 0
Eight-mile Creek Bridge	250 0 0	..	250 0 0
Wataroa Bluff Track	100 0 0	..	100 0 0
Doughboy Road extension	200 0 0	..	200 0 0
Milltown Track deviation	300 0 0	..	300 0 0
Sunny Bight Track (widening)	200 0 0	..	200 0 0
Gillam's Gully Track extension	200 0 0	..	200 0 0
Adair's Track (widening)	100 0 0	..	100 0 0
Callery Track and Bridge	400 0 0	200 0 0	200 0 0
Seven-mile Creek–Taipo	520 0 0	350 0 0	170 0 0
Mikonui River approaches	100 0 0	..	100 0 0
Seddon's Terrace Track extension	100 0 0	..	100 0 0
McKay's Creek Bridge	270 12 0	..	270 12 0
Middle Branch, Styx River	200 0 0	..	200 0 0
Kumara Beach Road	300 0 0	..	300 0 0
Waipori–Berwick	200 0 0	..	200 0 0
Outram–Waipori	200 0 0	..	200 0 0
Clarendon–Berwick	150 0 0	..	150 0 0
Table Hill–Canada Reefs	100 0 0	..	100 0 0
Lawrence–Waipori	1,325 0 0	1,050 0 0	275 0 0
Waitahuna–Lawrence	150 0 0	50 0 0	100 0 0
Waitahuna–Bruce County boundary	300 0 0	250 0 0	50 0 0
Clyde–Ophir	200 0 0	..	200 0 0
Clyde–Queenstown	1,200 0 0	1,000 0 0	200 0 0
Arrowtown–Macetown	1,300 0 0	1,200 0 0	100 0 0
Track up Shotover River	300 0 0	200 0 0	100 0 0
Nokomai Road	250 0 0	..	250 0 0
Skipper's–Gallant Tip	100 0 0	..	100 0 0
Beale's Hill deviation	100 0 0	..	100 0 0
Garston–Nevis	100 0 0	..	100 0 0
Arrow–Matatapu	100 0 0	..	100 0 0
Lawrence–Clyde	3,450 0 0	2,600 0 0	850 0 0
Road to dredging claims, Waimumu	100 0 0	..	100 0 0
Colac–Round Hill	250 0 0	123 9 5	126 10 7
Gore–Waikaka	400 0 0	..	400 0 0
Riversdale–Waikaia	200 0 0	..	200 0 0
Charlton Road	200 0 0	..	200 0
Waimumu Road	200 0 0	..	200 0 0
Havelock–Mahakipawa	209 7 0	2 2 0	207 5 0
Wangapeka–Kiwi	200 0 0	181 2 9	18 17 3
Mokihinui–Little Wanganui River	2,500 0 0	1,435 10 4	1,064 9 8
Dee Creek Bridge	482 0 0	403 10 0	78 10 0
Mangles Bridge	3,452 2 1	3,432 2 1	20 0 0
Belgrove–Westport–Reefton	7,928 1 8	7,227 2 10	700 18 10
Glenroy–Matakitaki Bridge	300 0 0	16 14 0	283 6 0
Larry's Creek Bridge extension	350 0 0	276 5 3	73 14 9
Reefton–Hokitika–Ross	9,337 12 9	9,050 1 9	287 11 0
Kokotahi Road	506 6 6	451 2 5	55 4 1
Cook's River Flat widening	400 0 0	369 15 6	30 4 6
Hokitika–Jackson's	1,932 16 1	1,832 16 1	100 0 0
Galway Bluff Track	150 0 0	134 14 10	15 5 2
Repairing bridge, Donnelly's Creek	440 1 3	427 12 8	12 8 7
Roads, Preservation Inlet	499 15 8	426 17 2	72 18 6
Tracks, Cromarty	407 5 0	216 6 3	190 18 9
Alpha Track	200 0 0	..	200 0 0
Roads, Stewart Island	200 0 0	9 12 0	190 8 0
Stewart Island, road to mines	150 0 0	1 12 0	148 8 0
Mason's Bay Track	150 0 0	4 7 6	145 12 6
Denniston Hill Road	3,448 18 11	3,256 9 8	192 9 3
Westport–Waimangaroa	387 14 8	379 5 10	8 8 10
Karamea Bridge	3,855 9 0	43 19 0	3,811 10 0
Granity Creek Bridge	300 0 0	157 6 6	142 13 6
Ahaura–Haupiri	1,000 0 0	571 11 4	428 8 8
Brunnerton–Blackball	200 0 0	..	200 0 0
Deadman's Creek Bridge	150 0 0	..	150 0 0
Orwell Creek Bridge	200 0 0	..	200 0 0
Great South Road	14,815 19 6	14,449 12 11	366 6 7
Okarito Forks–Waiho	637 1 8	337 1 8	300 0 0
	144,330 6 2	102,320 3 10	42,010 2 4

List of Works on Goldfields, &c.—*continued.*

Locality and Nature of Works.	Total Cost, or Amount authorised.	Amount of Contribution paid by Mines Department.	Amount due by Mines Department on Works still in Progress.
Schools of Mines.	£ s. d.	£ s. d.	£ s. d.
Schools of Mines	17,872 2 0	17,872 2 0	..
School of Mines (Otago University)	8,053 6 2	8,053 6 2	..
	25,925 8 2	25,925 8 2	..
Prospecting Subsidies.			
Westland County (Dwyer and party, Blue Spur)	783 16 0	758 6 0	25 10 0
Westland County (Beroz and Mills)	115 0 0	48 15 0	66 5 0
Westland County (Patrick and Moynihan)	80 0 0	26 0 0	54 0 0
Westland County, prospecting, Rimu (£1 for £1)	3,428 0 0	1,714 0 0	..
Westland County, prospecting, Kanieri (£1 for £1)	1,109 19 0	554 19 6	..
Westland County (McCormick and party)	39 0 0	..	19 10 0
Westland County (D. Ryan)	120 0 0	..	60 0 0
Noble, Stenhouse, and Crawford's tunnel, New Chum Creek	285 0 0	240 0 0	45 0 0
Holmes and party, Tucker's Flat	401 8 0	208 8 0	126 12 0
Prospecting deep levels, Kumara	3,269 0 8	1,197 10 4	437 0 0
Miners' Association, Ross (McLeod and Dunlop)	63 14 6	40 8 6	23 16 0
Miners' Association, Ross (Moye and Son)	31 9 6	8 19 6	22 10 0
Miners' Association, Ross (Smith and Regan)	164 2 0	135 0 0	29 2 0
Miners' Association, Ross (Woodhouse and party)	97 10 0	..	97 10 0
Inangahua County (Z. E. Curnow)	6 10 0	4 15 0	1 15 0
Buller County (Quinn and party)	34 0 0	18 0 0	16 0 0
Buller County (Murray and Forsyth	19 10 0	9 0 0	10 10 0
Buller County (Salter and party)	32 5 0	6 10 0	25 15 0
Buller County (Christmas and party)	4 15 0	..	4 15 0
Buller County (Jeffrey and Walker)	8 0 0	..	8 0 0
Buller County (Robertson and Sangwell)	26 0 0	..	26 0 0
Buller County (Burkitt and party)	13 0 0	..	13 0 0
Coromandel County	344 0 0	200 0 0	144 0 0
Coromandel County (J. and M. Fitzgerald's tunnel)	28 1 0	..	28 1 0
Miners' Association, Nelson Creek (Kelly and party)	100 0 0	13 15 0	86 5 0
Miners' Association, Nelson Creek (Hurley and party)	100 0 0	..	100 0 0
Tuapeka County, Gabriel's Gully	400 0 0	213 13 0	86 7 0
Greenstone Miners' Association (Harvey and Co.)	54 0 0	..	27 0 0
Towai-Hukerenui Coal Syndicate, Kawakawa	200 0 0	..	200 0 0
	11,358 0 8	5,397 19 10	1,784 3 0
Water-races.			
Waimea-Kumara Water-race	43,080 1 2	42,555 8 6	524 11 8
Mount Ida Water-race	8,899 19 5	8,626 13 11	273 5 6
Mountain Hut Water-race	144 13 7	144 13 7	..
Finlay and McLiver's Water-race, Measletown	400 0 0	34 5 4	165 14 8
	52,524 14 2	51,361 1 4	963 11 10
Drainage- and Tailings-channels.			
Waimea Main Tail-race	1,800 0 0	1,182 5 8	97 10 0
St. Bathan's Channel	3,000 0 0	1,437 10 0	562 10 0
Muddy Creek Channel	3,000 0 0	1,000 0 0	1,000 0 0
No. 4 Channel	1,200 0 0	1,151 10 8	..
Donnelly's Creek Tail-race	1,657 0 0	444 4 5	384 3 0
Kelly's Terrace Tunnel	2,667 10 0	1,302 13 5	583 11 7
	13,324 10 0	6,518 4 2	2,627 14 7
Water-conservation on Goldfields.			
Engineer's salary and expenses	1,068 9 4	1,068 9 4	..
Reports on Drainage, Ross Flat	284 10 8	284 10 8	..
Eweburn Reservoir	15,000 0 0	13,893 1 4	..
Coromandel Harbour and Kuaotunu Sludge channel	80 12 6	80 12 6	..
	16,433 12 6	15,326 13 10	..
Summary of Works.			
Roads (subsidised)—			
Coromandel County	1,950 0 0	170 0 0	1,080 0 0
Thames County	650 0 0	26 12 0	298 8 0
Thames Borough	725 0 0	..	380 0 0
Ohinemuri County	550 0 0	451 14 0	48 6 0
Matamata Road Board	300 0 0	..	100 0 0
Katikati Road Board	50 0 0	19 18 9	5 1 3
Piako County	580 0 0	..	290 0 0
Picton Road Board	100 0 0	34 0 0	16 0 0
Pelorus Road Board	50 0 0	..	30 0 0
Waimea County	1,000 0 0	469 14 4	280 5 8
Collingwood County	700 0 0	..	350 0 0
Buller County	1,250 0 0	..	625 0 0
Grey County	430 0 0	..	251 0 0
Westland County	150 0 0	45 16 6	29 3 6
Tuapeka County	550 0 0	341 3 6	8 16 6
Lake County	4,344 0 0	2,200 0 0	1,119 0 0
Vincent County	200 0 0	..	100 0 0
	13,579 0 0	3,758 19 1	5,011 0 11
Works under construction wholly by Mines Department	144,330 6 2	102,320 3 10	42,010 2 4
Schools of Mines	25,925 8 2	25,925 8 2	..
Prospecting subsidies	11,358 0 8	5,397 19 10	1,784 3 0
Water-races	52,524 14 2	51,361 1 4	963 11 10
Drainage- and tailings-channels	13,324 10 0	6,518 4 2	2,627 14 7
Compensation, proclamation of rivers	6,683 14 6	6,683 14 6	..
Water-conservation on goldfields	16,433 12 6	15,326 13 10	..
Total	284,159 6 2	217,292 4 9	52,396 12 8

LIST OF WORKS ON GOLDFIELDS constructed wholly by the Mines Department, or by Subsidies to County Councils, Local Bodies, and Prospecting Associations, and completed prior to the 31st March, 1900.

Locality and Nature of Works.	Total Cost.	Amount of Contribution paid by Mines Department.
NORTH ISLAND.		
ROADS (SUBSIDISED).		
Bay of Islands County.	£ s. d.	£ s. d.
Tiriwhanga Gorge to Galbraith's Road, Puhipuhi	237 0 0	118 10 0
Air-line Road to battery-site, Puhipuhi	73 0 0	36 10 0
Tiriwhanga Gorge to Puhipuhi	800 0 0	800 0 0
New Bay of Islands Coal Company	500 0 0	250 0 0
Road, Taumarere Railway-station to Puhipuhi	482 0 0	146 0 0
	2,092 0 0	1,351 0 0
Coromandel County.		
Improving road to Iona and Just-in-Time Companies' mines	200 0 0	133 6 8
Making and improving track from Tokatea towards Kennedy Bay	320 0 0	213 6 8
Golden Belt Track	100 0 0	50 0 0
Tokatea Road (repairs)	300 0 0	150 0 0
Making and improving track from Golden Belt to Tiki	239 3 3	159 8 10
Making road from Ring's Bridge to Kapanga Mine	150 0 0	100 0 0
Making road to Kapanga Mine	132 0 0	88 0 0
Temporary track from Tokatea Saddle to Waikoromiko	50 0 0	33 6 8
Continuation of track from Success Company's mine to top of main range	80 0 0	53 6 8
Completion of road from Tokatea Saddle to Tokatea Battery	50 0 0	33 6 8
Widening road from Matawai to Vaughan's claim	357 0 0	238 0 0
Improving track, Mercury Bay to Waitai	100 0 0	66 13 4
Continuation and improving Waikoromiko Track	150 0 0	100 0 0
Emily Battery to Rocky Creek	60 0 0	40 0 0
Track, Bismarck Battery to Kennedy Bay	200 0 0	133 6 8
Road up Manaia	675 10 6	450 7 0
Extension of Vaughan's and Vizard's Tracks	150 0 0	100 0 0
Vizard's towards Marebel	200 0 0	133 6 8
Extending and widening Waitaia Road	100 0 0	66 13 4
Makarau to Waiau	1,600 0 0	1,066 13 4
Waikawau to Tiki	500 0 0	333 6 8
Paul's Creek to Cabbage Bay	200 0 0	133 6 8
Waikawau Creek Track	100 0 0	50 0 0
McLaughlin's Road	100 0 0	50 0 0
Manaia to McGregor's new find	100 0 0	50 0 0
Manaia to Tiki	500 0 0	250 0 0
Old sawmill towards Matawai	200 0 0	100 0 0
Extension of Paul's Creek Track	300 0 0	150 0 0
Matarangi Track	400 0 0	200 0 0
Thames–Coromandel Road, *viâ* Manaia	300 0 0	150 0 0
Harbour View extension	210 0 0	105 0 0
Kapanga to Paul's Creek	200 0 0	100 0 0
Mercury Bay to Kuaotunu	360 0 0	180 0 0
Wainara to Kuaotunu	450 0 0	225 0 0
Sea-beach to Kuaotunu	1,650 0 0	1,450 0 0
Just-in-Time Road, extension to Coromandel	450 0 0	225 0 0
Road, Waikawau Bridge to McLaughlin's	67 10 0	45 0 0
Mercury Bay Road	990 0 0	495 0 0
Bridge to Dugend's store, and widening and metalling road from bridge to Log Hut	450 0 0	300 0 0
Road from junction of Red Mercury battery up Pumpkin Flat to Waitaia	345 0 0	230 0 0
To connect road from Log Hut to commencement of contract of Kuaotunu–Mercury Bay Road	150 0 0	100 0 0
Road, with culverts and bridge, from Kapanga Hill to Scotty's Gold-mining Company's mine	200 0 0	150 0 0
Pumpkin Flat–Just-in-Time Road	310 0 0	170 0 0
Lower road from Great Mercury battery to Kapai low level and battery-site	450 0 0	300 0 0
Road from main road, Kapanga to Success Mine	600 0 0	300 0 0
Cemetery Road and Bridge, Kuaotunu	100 0 0	75 0 0
Road from Coromandel–Kennedy Bay Main Road to Wereroa Creek	300 0 0	150 0 0
Leading Wind Mine Road	100 0 0	50 0 0
Fury's Bridge	450 0 0	225 0 0
Carroll's Bridge	400 0 0	200 0 0
Horne's Bridge	200 0 0	100 0 0
Road from Main Kennedy Bay Road to Monte Carlo and other claims	300 0 0	150 0 0
Castle Rock Mine Road, Tiki	200 0 0	100 0 0
Road between Bismarck Battery and Hauraki Associated Gold-reefs	400 0 0	200 0 0
Bridge, Warekaho Creek	300 0 0	150 0 0
Cabbage Bay to Mines	300 0 0	150 0 0
Two bridges and approaches, Kuaotunu Main Road	300 0 0	150 0 0
Road from Success Road to workings of Karaka Block Syndicate	200 0 0	100 0 0
Widening Waitaia Battery Road	100 0 0	50 0 0
Cabbage Bay–Waitete	240 0 0	120 0 0
	18,686 3 9	11,220 15 10

LIST of WORKS on GOLDFIELDS, &c.—*continued.*

Locality and Nature of Works.	Total Cost.	Amount of Contribution paid by Mines Department.
Te Aroha Town Board.	£ s. d.	£ s. d.
Road to connect with railway-station	120 0 0	60 0 0
Lipsey's Bridge	64 0 0	32 0 0
Repairing flood-damages	150 0 0	75 0 0
	334 0 0	167 0 0
Thames County.		
Making new road from Ohinemuri River to Karangahake Quartz-mine	650 0 0	433 6 8
Dray-road to connect Otanui Mines with crushing-battery at Maungawhērawhera Creek	710 0 0	473 6 8
Improving roads from Waitekauri Road to Katikati Road	250 0 0	166 13 4
Improving road up Karaka Creek to Lucky Hit Company's mine	263 1 0	175 7 4
Improving road to upper mines, Waitahi	258 18 10	172 12 7
Karangahake to battery	300 0 0	200 0 0
Ralph's Battery, Waitekauri	399 1 0	199 10 6
Otanui Road to mines	299 18 0	199 18 8
Road to Wick's Battery	70 0 0	46 13 4
Rocky Point Road, Tararu	300 0 0	200 0 0
Thames Borough boundary to hæmatite-mine	350 0 0	233 6 8
Widening road from bridge over Hape Creek to Otanui Mines	183 17 0	122 11 4
Track, Karangahake Goldfield	784 1 0	522 14 0
Kauaeranga Valley to Otanui	470 7 0	313 11 4
Tapu Road to mines	81 17 9	54 11 10
Tauranga Road to Karangahake Bridge site	341 5 0	227 10 0
Karangahake Bridge	229 6 6	152 17 8
Track up Maungakerikeri Creek	93 4 4	62 2 11
Thames Borough boundary to Hape Creek No. 2	600 0 0	300 0 0
Upper Karaka Road	179 13 0	119 15 4
Repairing flood-damages, Waiotahi, Moanataiari, Karaka, and Collarbone Roads	350 0 0	175 0 0
Sea-beach to Waiomo	750 0 0	375 0 0
Te Papa Gully Road	75 0 0	37 10 0
New Find to Waiomo Battery	110 0 0	55 0 0
Rocky Point Road	429 11 10	214 15 11
Waiotahi towards Mercury Bay	522 11 0	261 5 6
Te Mata Road	178 17 6	89 8 9
Waiomo Creek to Tapu	1,499 0 0	749 10 0
Alabama Creek Track	100 0 0	50 0 0
Road from Prospectors' Mine, Puriri, to battery	50 0 0	25 0 0
Karaka Creek to Lucky Hit	365 0 0	182 10 0
Bullion Mine, Tapu, to battery	36 5 0	18 2 6
Track to Hikutaia Goldfield	147 15 2	73 17 7
Upper Tararu Road to Sylvia Mine	684 7 0	342 3 6
Road to Puriri Battery	11 13 0	5 16 6
Thames–Waikawau Road	37 10 0	18 15 0
Track from Tararu Creek Road to McDermot's Claim	45 0 0	22 10 0
Track to Try Fluke Claim, Tapu	94 15 0	47 7 6
Waiomo to Puhoi Creek	33 0 0	16 10 0
Waiokaraka Road, Bella Street, and Campbell Street to Moanataiari Creek	200 0 0	100 0 0
Moanataiari Creek Road	100 0 0	50 0 0
Tararu Creek Road and Tararu Road	150 0 0	75 0 0
Hape Creek Road	150 0 0	75 0 0
Omahu–Tairua	100 0 0	42 0 0
Karaka Creek Road	150 0 0	68 4 6
Onetai Valley Road	40 0 0	12 10 0
	13,224 15 11	7,559 7 5
Thames Borough.		
Repairing roads	975 19 2	600 0 0
Widening and straightening Karaka Creek	300 0 0	150 0 0
Metalling goldfields roads	584 0 0	438 0 0
Removing *débris*, Karaka Creek	200 0 0	100 0 0
Half-cost damage, Hawk's stable	96 0 0	48 0 0
Repairs, Moanataiari Creek Tunnel	100 0 0	52 0 0
Repairs, Moanataiari and Waiotahi Aqueducts	620 0 0	375 0 0
	2,875 19 2	1,763 0 0
Ohinemuri County.		
Jubilee Mine Track	118 0 0	59 0 0
Track up Tui Creek	306 0 0	153 0 0
Prospecting-track, Whangamata and Waitekauri	200 0 0	166 13 4
Tramway, Karangahake to Railey's reduction-works	400 0 0	200 0 0
Strengthening bridges, Waihi Road	200 0 0	133 6 8
Paeroa to Hikutaia	400 0 0	200 0 0
Repairs, flood-damages	34 13 8	17 6 10
Hikutaia River to Marototo Mine	180 15 0	90 7 6

LIST of WORKS on GOLDFIELDS, &c.—*continued.*

Locality and Nature of Works.	Total Cost.	Amount of Contribution paid by Mines Department.
Ohinemuri County—continued.	£ s. d.	£ s. d.
Karangahake through Gorge (bridge and culverts)	200 0 0	100 0 0
Waitekauri Lower Road	360 0 0	189 2 8
Metalling Karangahake Gorge Road	170 0 0	85 0 0
Karangahake and Waihi Road	237 10 0	118 15 0
Karangahake Hill Track	87 4 0	43 12 0
Bridge over Ohinemuri River at Karangahake	12 11 0	6 5 6
Hikutaia–Paeroa Road	500 0 0	250 0 0
Paeroa–Te Aroha Road	200 0 0	100 0 0
Tui Creek Track	129 18 6	64 19 3
Waitekauri to Lowrie's and Birnie's	200 0 0	100 0 0
Road, Karangahake to Waihi	246 12 3	164 8 2
Lower Waitekauri Road	347 13 4	230 16 4
Road, Thames Road to Netherton Punt	60 0 0	50 0 0
Komata Creek Road	600 0 0	300 0 0
Road, Paeroa Bridge to Kuaoti Creek	400 0 0	133 6 8
Punt at south end Netherton–Paeroa Road	275 0 0	175 0 0
Repairs, Waitekauri Township Road	200 0 0	100 0 0
Bridge, Paeroa–Te Aroha Road	60 0 0	30 0 0
Karangahake Bridge	1,032 0 0	512 16 9
Drain along Mill Road, Paeroa	200 0 0	90 2 5
Road, Te Iringa-o-Pirori Block	200 0 0	143 0 0
Low-level tunnel, Jubilee Mine (E. Kersey Cooper)	1,500 0 0	103 16 0
	9,057 17 9	4,110 15 1
Piako County.		
Extension and completion of Te Aroha Tramway	18,000 0 0	12,000 0 0
Tramway to Fergusson's Battery, Waiorongomai	1,500 0 0	1,000 0 0
Road, Waiorongomai	497 17 0	331 18 0
Track to claims at Buck's Reef	55 5 6	36 17 0
Track, Fern Spur to Butler's Spur	231 17 9	154 11 10
Tracks up Stony Creek, Te Aroha Goldfield, &c.	54 0 0	36 0 0
Repairs, Upper Premier Track and new track towards Waitawheta	40 0 0	20 0 0
Repairs, Te Aroha–Lichfield Road	302 0 0	125 0 0
Waiorongomai Tramway	263 2 0	175 0 0
Gordon–Waharoa	100 0 0	50 0 0
Te Aroha–Gordon	200 0 0	100 0 0
Murphy's Bridge	24 0 0	12 0 0
Repairs, Waiorongomai Tramway	150 0 0	75 0 0
	21,418 2 3	14,116 6 10
Katikati Road Board.		
Katikati–Karangahake Track	400 0 0	200 0 0
Bridge on branch road to Katikati	68 0 0	34 0 0
	468 0 0	234 0 0
Hutt County.		
Road to connect Otorongo Bay with Albion Company's battery, also to connect Terawhiti Quartz-mine with battery	509 16 6	210 17 0
Road, Makara Junction to Terawhiti	450 0 0	225 0 0
	959 16 6	435 17 0
SOUTH ISLAND.		
ROADS (SUBSIDISED).		
Marlborough County.		
Track, Deep Creek to Dead Horse Creek	68 0 0	45 6 8
Mouth of Gorge to Forks, Cullensville to Mahakipawa Diggings	450 0 0	225 0 0
Formation of road at Cullensville, Mahakipawa	217 4 0	108 12 0
Havelock–Mahakipawa Road	905 0 0	505 0 0
Dead Horse Creek to Sunnyside	75 0 0	50 0 0
	1,715 4 0	933 18 8
Waimea County.		
Road to open up Table Diggings	260 0 0	130 0 0
Punt over Motueka River	100 0 0	50 0 0
Repairing Baton to Table-land Track	40 0 0	20 0 0
Dove River to Baton Saddle, and from Rolling River to Wangapeka Saddle	120 0 0	60 0 0
	520 0 0	260 0 0

LIST of WORKS on GOLDFIELDS, &c.—*continued.*

Locality and Nature of Works.	Total Cost.	Amount of Contribution paid by Mines Department.
Collingwood County.	£ s. d.	£ s. d.
Road, West Wanganui	300 0 0	200 0 0
Bridge over Aorere River	173 14 0	115 16 0
Extending Anatoki Bridle-track	160 0 0	80 0 0
Bridge over Takaka River at Pain's Ford	1,597 7 8	798 13 10
Repairs, Silverstream Bridge, and forming and metalling Bainham Road	200 0 0	100 0 0
	2,431 1 8	1,294 9 10
Buller County.		
Deviation of road from Candlelight Flat to Deep Creek, Charleston	370 0 0	246 13 4
Road from Orowaiti Lagoon to North Terrace	256 18 6	171 5 8
Prospecting-track from Razorback to Paparoa Range	100 0 0	66 13 4
Track from Seatonville to Larrikin's	438 9 6	292 6 4
Waimangaroa to Denniston	787 0 0	393 10 0
Road to connect alluvial workings with Charleston Road	400 0 0	266 13 4
Track, Four-mile Creek towards Grey Valley	300 0 0	200 0 0
Road to connect alluvial diggings north of Deadman's Creek	278 0 0	185 6 8
Ngakawau to Mokihinui, *viâ* beaches	100 0 0	66 13 4
Road to connect Ngakawau Railway with Mokihinui Coal Company's workings	193 0 0	128 13 4
Lyell Bluff to Victor Emmanuel Claim	650 0 0	433 6 8
Beach, Little Wanganui to Mokihinui	300 0 0	100 0 0
Cape Foulwind Road	450 0 0	300 0 0
Road up Nile Valley	56 16 4	28 8 2
Denniston extension	850 0 0	425 0 0
Promised Land towards Motueka	380 0 0	190 0 0
Road over Gentle Annie	200 0 0	100 0 0
Extension, Lyell Creek to Low-level Tunnel	60 0 0	30 0 0
Extension of track 50 chains south of Brighton	140 0 0	70 0 0
Continuation of road, Deadman's Creek	437 17 0	218 18 6
Ngakawau Railway-station to Mokihinui	50 0 0	25 0 0
Addison's Flat towards ranges	20 0 0	10 0 0
North Terrace to Oparara Diggings	500 0 0	333 6 8
Extension of Croninville Road	100 0 0	50 0 0
Waimangaroa to sea-beach	80 0 0	40 0 0
Extension of track, Oparara to Fenian Creek	100 0 0	50 0 0
Con's Creek to Beaconsfield	80 0 0	40 0 0
Addison's Flat to Caroline Terrace	200 0 0	100 0 0
Waimangaroa to sea-beach extension	390 0 0	195 0 0
Addison's Flat to Gallagher's Lead	50 0 0	25 0 0
Road to Swanston's Gold-mining Company	50 0 0	25 0 0
Repairs to roads at Lyell	200 0 0	100 0 0
Track, Fairdown from North Terrace	150 0 0	97 8 0
Improving road to Four-mile Creek, Charleston	900 0 0	450 0 0
Bridge, Waimangaroa River	70 0 0	35 0 0
Road to Piper's Flat, Addison's	450 0 0	150 0 0
Lyell Creek to Gibstown	200 0 0	66 13 4
	10,338 1 4	5,705 16 8
Inangahua County.		
Dray-road from Soldier's Creek to Devil's Creek	647 0 0	431 6 8
Dray-road from Inangahua to Rainy Creek Battery	900 10 0	606 6 8
Dray-road from Capleston up Little Boatman's Creek	379 0 0	252 13 4
Dray-road from Capleston up Main Boatman's Creek	697 0 0	464 13 4
Dray-road from Westport Road to Inangahua River	224 5 0	149 10 0
Track from Devil's Creek to Big River	134 3 6	89 9 0
Track from Waitahu River to Capleston	358 0 0	238 13 4
Survey and expenses	250 0 0	166 13 4
Track from Cariboo to Big River	728 0 0	364 0 0
Dray-road up Murray Creek to United Inglewood Claim	3,472 0 0	2,314 17 4
Road from Reefton to Big River, *viâ* Devil's Creek	614 0 0	307 0 0
Road up Big River	922 19 0	615 6 0
Continuation of dray-road up Little Boatman's Creek	169 7 6	112 18 4
Road from Capleston to Larry's Creek	640 0 0	426 13 4
Track to connect Capleston with Lone Star	75 0 0	50 0 0
Crushington to Globe Company's workings	403 0 0	201 10 0
Snowy Creek Track	85 15 0	42 17 6
Reefton to Big River	1,792 0 0	1,194 13 4
Glenroy to Horse Terrace	254 0 0	122 10 0
Devil's Creek to Globe Hill	917 6 2	458 13 1
Extension of dray-road to Boatman's *viâ* Painkiller	53 17 6	26 18 9
Mangles Valley to McGregor's Station	600 0 0	300 0 0
Globe Hill to Merrijigs	1,397 6 0	698 13 0
Larry's Creek to Lyell	1,061 15 0	530 17 6
Widening Larry's Creek Road	118 10 0	59 5 0
Road up Burke's Creek, Little Boatman's	149 0 0	74 10 0
Widening track from Scotia Tunnel, on Big River Road, to Inkermann Mine	200 0 0	80 9 0
Widening track from Fiery Cross Battery to Just-in-Time Shaft	300 0 0	150 0 0
	17,552 14 8	10,530 17 10

LIST of WORKS on GOLDFIELDS, &c.—*continued*.

Locality and Nature of Works.	Total Cost.			Amount of Contribution paid by Mines Department.		
Grey County.	£	s.	d.	£	s.	d.
Road from No Town to Deep Creek	1,100	0	0	550	0	0
Road from Langdon's to Moonlight	1,600	0	0	800	0	0
Contribution from goldfields vote towards main road	2,296	6	6	2,296	6	6
Track, Waipuna to Clarke's River	1,200	0	0	800	0	0
Track, Cameron's to Cape Terrace	700	0	0	466	13	4
Road, Limestone to Maori Creek	800	0	0	533	6	8
Red Jack's to Nelson Creek	601	17	6	401	5	0
Barrytown to Deadman's	2,240	0	0	1,493	6	8
German Gully to Arnold's Flat	120	0	0	60	0	0
Baird's Terrace to Lake Brunner	400	0	0	200	0	0
Hatter's Terrace Road	1,000	0	0	500	0	0
Irishman's to Lake Brunner	2,400	0	0	1,200	0	0
Hatter's Terrace	600	0	0	400	0	0
Track, Baird's Terrace to Irishman's	250	0	0	125	0	0
Deep Creek to Bell Hill	1,331	0	0	665	10	0
Track to Blackball Diggings	790	0	0	395	0	0
Track from Ahaura, Kopara, Reese's Flat, to new rush on banks of Ahaura River	20	0	0	10	0	0
Renewal, bridge over Nelson Creek, Marsden–Dunganville Road	38	0	0	19	0	0
Repairs (corduroying), Cobden–Seven-mile Road	36	0	0	18	0	0
Repairs, Cobden–Point-Elizabeth Road	30	0	0	15	0	0
Extension Ngahere–Blackball Road to Blackball Ferry	50	0	0	25	0	0
Dray-bridge, Ten-mile Creek	688	0	0	344	0	0
Deviation, Moonlight Track	100	0	0	50	0	0
Repairs, bridges, Marsden–Dunganville Road	348	0	0	219	0	0
Seventeen-mile Bluff to Barrytown	80	0	0	40	0	0
Removing rocks, Nine- and Ten-mile Bluffs	100	0	0	50	0	0
Crœsus Battery-site, Paparoa	200	0	0	79	5	0
	19,119	4	0	11,755	13	2
Westland County.						
Improving track, Butcher's Creek to Gentle Annie Terrace	225	10	0	163	13	4
Bridle-track to Kanieri Lake	719	11	0	350	5	6
Bridle-track to Eel Creek	168	9	0	84	4	6
Tunnel-track, Galway Beach to Gillespie's Beach	437	5	0	218	12	6
Road from Duffer's Creek, Greenstone Road, to fifteen-mile peg, Christchurch Road	726	9	0	480	4	6
Continuation of track, Back Creek to Eel Creek	249	4	0	166	3	4
Bridle-track, Duffer's Creek, Bowen and Okarito Road, to sea-beach	333	18	0	222	12	0
Ross Borough boundary to Mount Greenland	1,280	15	0	853	16	8
Track, Kanieri Lake to Humphrey's Gully	279	2	0	186	1	4
Track, Larrikin's to Loop-line Dam	449	11	0	299	14	0
Rough Wainihinihi to Upper Dam	450	0	0	300	0	0
Browning's Pass to Reefs	3,311	6	0	2,207	10	8
Okarito Forks to Teal Creek	600	0	0	400	0	0
Road, Christchurch to Baldhill Range reefs	500	0	0	250	0	0
Extension of Tucker's Flat Road to New Rush	170	19	6	85	9	9
Hokitika Borough boundary (Reefton) to Shotover Rush	120	0	0	60	0	0
Track to New Rush, Back Creek	100	0	0	50	0	0
Repairing old track round Wataroa Bluff	50	0	0	25	0	0
New Rush, south side of Hokitika River	37	18	6	18	19	3
Cedar Creek Road to Farmer's Creek	55	7	0	27	13	6
Road to gold discovery near Blue Spur	75	0	0	37	10	0
Widening Seddon's Terrace Track	150	0	0	65	10	0
Branch Road at Seddon's Terrace	38	10	6	19	5	3
Track up Middle Branch, Styx River	30	0	0	15	0	0
	10,558	15	6	6,596	6	1
Taieri County.						
Mullocky Gully to Silver Peak	499	15	0	333	3	4
Lake County.						
Track, Skipper's to Phœnix and Scandinavian Reefs	292	2	3	194	14	10
Track to connect scheelite-mine with Lake Wakatipu	225	0	0	150	0	0
Arrowtown to Macetown, construction	225	0	0	150	0	0
Arrowtown to Macetown, maintenance	150	0	0	100	0	0
Invincible Quartz-reef Track, Rees River	300	0	0	200	0	0
Rees Valley to company's workings	61	7	6	30	13	9
Pack-track, Criffel Diggings	50	6	6	33	11	0
Left-hand Branch Road, Skipper's	63	9	10	31	14	11
Old Morven Ferry Road	289	0	0	144	10	0
Road to workings above Cardrona	70	0	0	35	0	0
Piers, Victoria Bridge	725	0	0	362	10	0
Skipper's Road Saddle to Deep Creek	200	0	0	100	0	0
	2,651	6	1	1,532	14	6

LIST of WORKS on GOLDFIELDS, &c.—*continued.*

Locality and Nature of Works.	Total Cost.	Amount of Contribution paid by Mines Department.
	£ s. d.	£ s. d.
Tuapeka County.		
Making road from top of Terrace to Waipori Bush	300 0 0	200 0 0
Road, Beaumont to Remarkable Bush	300 0 0	200 0 0
Improving road from Waipori Township to antimony-mines, Lammerlaw Ranges	200 0 0	133 6 8
Waipori Township to Waipori Bush	200 0 0	133 6 8
Clutha River to Campbell's	76 9 0	50 19 4
Waitahuna to copper-mine	200 0 0	133 6 8
Road to open up quarry for Waitahuna Bridge	160 9 10	106 19 11
Waipori Road, *viâ* Bungtown	566 8 10	283 4 5
Miller's Flat Bridge	11,242 0 0	6,621 0 0
Shelter-sheds and snow-poles	100 0 0	50 0 0
Waipori Bridge	800 0 0	400 0 0
	14,145 7 8	8,312 3 8
Cromwell Borough.		
Removal of sand	200 0 0	100 0 0
Wallace County.		
Track, Colac Bay to Round Hill	200 0 0	133 6 8
Pack-track to Round Hill, Colac, and Orepuki	1,050 0 0	500 0 0
Cutting tracks, Longwood	59 6 0	29 13 0
	1,309 6 0	662 19 8
Vincent County.		
Renewal bridge to Bannockburn	1,532 0 0	850 0 0
Maniototo County.		
Road to Serpentine Diggings	136 10 0	91 0 0
Pig and Whistle to Clarke's Diggings	200 0 0	133 6 8
Shepherd's Hut Flat to Vinegar Hill	100 0 0	66 13 4
Kyeburn Peninsula to main road	82 0 0	41 0 0
	518 10 0	332 0 0
Fiord County.		
Dusky Sound, tracks	300 0 0	200 0 0
Waitaki County.		
Road, Naseby to Livingstone	41 12 0	20 16 0
Southland County.		
Improving tracks from Mataura to Nokomai	75 0 0	50 0 0
Improving road, Waikaka to Leatham	150 0 0	100 0 0
Improving road from Waikaka Township to Leatham Creek	30 0 0	20 0 0
Improving road from Waikaka to Waikaka railway-siding	150 0 0	100 0 0
Widening and improving bush-track to Waikawa	150 0 0	100 0 0
Waikaka to Switzer's	150 0 0	100 0 0
Road near Waikaka Township	150 0 0	100 0 0
Waipapa to Six-mile Beach	175 0 0	87 10 0
Repairing bridges, Waikaia Bush	38 13 4	13 4 0
Dray-road to Ferry Terrace, Nokomai	100 0 0	50 0 0
Waikaia to Whitecomb	511 6 8	280 13 4
Parawa to Switzer's, *viâ* Nokomai	150 0 0	75 0 0
Track to Switzer's Freehold Gold-mining Company	175 0 0	175 0 0
Nevis Road	100 0 0	50 0 0
Parawa to Nokomai	150 0 0	75 0 0
Waikaia to Break-'em-All Claim	100 0 0	50 0 0
	2,355 0 0	1,426 7 4
DIAMOND AND OTHER DRILLS.		
Inangahua County Council (diamond)	2,000 0 0	1,000 0 0
Springfield Colliery Company (diamond)	1,250 0 0	625 0 0
Westland County Council (tiffin)	350 0 0	233 0 0
Diamond-drills for prospecting purposes	1,570 11 4	1,570 11 4
	5,170 11 4	3,428 11 4
WHARVES.		
Repairs to wharf, Coromandel	300 0 0	150 0 0
Anikiwi Jetty, Marlborough	135 15 9	135 15 9
	435 15 9	285 15 9
AIDS TO PROSPECTING.		
Construction of low-level tunnel, Terawhiti	750 0 0	150 0 0
Queen of Beauty Company, prospecting deep levels	300 0 0	150 0 0
Caledonian Low-level Company, prospecting deep levels	300 0 0	150 0 0
Red Hill Gold-mining Company, prospecting deep levels	600 0 0	300 0 0
Caledonian Low-level Company, low-level tunnel	2,700 0 0	300 0 0
Lyell Creek Extended Company, low-level tunnel	300 0 0	150 0 0
New Cromwell Gold-mining Company	250 0 0	100 0 0
Deep-level Association, Waipori	450 0 0	300 0 0

List of Works on Goldfields, &c.—*continued.*

Locality and Nature of Works.	Total Cost.	Amount of Contribution paid by Mines Department.
Aids to Prospecting—*continued.*	£ s. d.	£ s. d.
Little Boatman's deep-level tunnel	600 0 0	300 0 0
Oterongia Prospecting Association	198 17 2	99 8 7
Vincent County	137 9 0	68 14 6
Tapanui Prospecting Association	25 0 0	12 10 0
Tuapeka County	12 0 0	6 0 0
Maniototo County	500 0 0	250 0 0
Pullar, Shelmerdine, and Basan	400 0 0	200 0 0
Royal Oak Association	300 0 0	150 0 0
Star of the East Quartz-mining Company	150 0 0	75 0 0
West Coast Prospecting Association	300 0 0	150 0 0
McBride and party	169 2 2	84 11 1
McLean and party	66 0 0	33 0 0
Deep-level tunnel, Tokatea	700 0 0	350 0 0
Deep-level tunnel, Owharoa	300 8 0	200 5 4
Deep-level tunnel, Tapu	1,200 0 0	600 0 0
Deep-level tunnel, Cedar Creek	1,207 10 0	603 15 0
Manuka Flat Prospecting Association	200 0 0	100 0 0
Red Hill Minerals Company	437 19 10	218 19 11
Tuapeka Prospecting Association	277 0 0	138 10 0
Cardrona Prospecting Association	800 0 0	400 0 0
Cromwell Prospecting Association	500 0 0	250 0 0
Coromandel County	550 0 0	275 0 0
Thames County	309 18 0	154 19 0
Thames Borough	200 0 0	100 0 0
Buller County	146 12 6	73 6 3
Inangahua County	488 7 0	244 3 6
Westland County	1,236 19 4	618 9 8
Grey County	871 15 2	435 17 7
Deep-level Prospecting Association, Waipori	432 9 8	216 4 10
Waipu Prospecting Association	180 0 0	90 0 0
Hokianga County	100 0 0	50 0 0
Vulcan Smelting-works, Onehunga	30 0 0	15 0 0
Ohinemuri County	100 0 0	50 0 6
Waitaki County	29 5 0	14 12 6
Waihemo County	85 9 0	42 14 0
William Fox and party	711 1 8	355 10 11
Kirk and party	176 0 10	88 4 10
Hodge and party	98 13 8	49 6 10
Carey and Hyndman	441 9 4	220 14 0
Don, Boyce, and party	107 16 0	53 18 0
Quentin McKinnon	58 10 0	29 5 0
Bullion Mine deep-level tunnel	300 0 0	150 0 0
Sutherland and party	30 0 0	15 0 0
Inangahua low-level tunnel	6,966 0 0	3,000 0 0
Deep-level tunnel, Manaia	451 4 0	225 12 0
Waimea Miners' Association, prospecting at Callaghan's	50 0 0	50 0 0
Totara Miners' Association, Ross	51 3 6	51 3 6
Ross, Cunningham, and another	9 0 0	9 0 0
Wm. Thompson, stores from Benmore Station	2 1 10	2 1 10
Totara Miners' Association, Ross	8 6 6	8 6 6
Harris, Davidson, and party	27 7 6	27 7 0
Boatman's Tailings Company	150 0 0	150 0 0
Boys's tunnel, Bluespur	94 12 3	94 12 0
Totara Miners' Association (Ross, Montina, and party)	246 10 0	246 10 0
Gillam's Gully Prospecting Association	94 15 0	94 15 0
Deep-level Prospecting Committee, Dillmanstown	407 0 3	407 0 3
Westport Prospecting Association	25 0 0	25 0 0
Te Aroha Prospecting Association	20 12 6	20 12 6
Robert Richie, Kuaotunu	72 3 0	36 1 0
Owharoa Tunnel (Lindsay Jackson)	325 0 0	162 10 0
Coromandel County (£1 for £1)	200 0 0	100 0 0
Mr. G. Rehay, Arahura	98 15 0	49 7 6
Hyndman and party, Callaghan's Flat	552 14 6	276 7 3
Lakes Mapourika, Waiho, and Wataroa Miners' Association	53 12 0	26 16 0
Kumara Miners' Association	22 10 0	11 5 0
Thames Miners' Union	75 15 0	37 17 6
Star of Canterbury Miners' Association	38 5 0	19 2 6
Miners' Association, Rimu	16 0 0	8 0 0
Buller County (Messrs. Negri and others)	27 0 0	13 10 0
Johnson and party, tunnel at Callaghan's Flat	90 0 0	45 0 0
W. L. Webb, Nelson	24 0 0	12 0 0
Kumara Miners' Association (Solberg, Stewart, and party)	64 15 0	32 7 6
Buller County, between head of Fox's River, Brighton, and Deadman's Creek	29 5 0	14 12 6
Welcome United Gold-mining Company, Greymouth	245 12 6	122 16 3
Orepuki Miners' Association	90 0 0	45 0 0
Totara Miners' Association (Gagliardi and party)	12 10 0	6 5 0
Contingencies	484 15 10	242 7 11
Halligan and party, tunnel at Cedar Creek	198 1 10	99 0 11
Totara Miners' Association (Chamberlain and party)	208 10 0	104 5 0
Miners' Association, Greenstone	59 0 0	29 10 0
Westland County (T. Radonicki and party)	40 0 0	20 0 0
Waimea Miners' Association (Lot, Keir, and party)	90 0 0	45 0 0
Cardrona Prospecting Association	140 5 4	70 2 8
Waimea Miners' Association, Stafford	113 1 0	56 10 6

LIST of WORKS on GOLDFIELDS, &c.—*continued.*

Locality and Nature of Works.	Total Cost.	Amount of Contribution paid by Mines Department.
AIDS TO PROSPECTING—*continued.*	£ s. d.	£ s. d.
H. Crossan, Beaumont	28 0 0	14 0 0
Prospecting Association, Westport	39 0 0	19 10 0
Cape Colville Prospecting Syndicate	32 0 0	16 0 0
Port Charles Prospecting Association	28 0 0	14 0 0
Totara Miners' Association, Ross	24 0 0	12 0 0
Lake Mapourika Miners' Association	12 0 0	6 0 0
Lister and Robertson, Karamea	13 0 0	13 0 0
Canada Reefs Tunnel	187 10 0	93 15 0
Otago Miners' Association	600 0 0	291 8 2
Westland County (Goudie and party)	215 19 9	107 19 6
Paparata Road Board	26 0 0	13 0 0
Tauranga County (Te Puke Prospecting Association)	50 0 0	25 0 0
Havelock Miners' Association	78 0 0	39 0 0
Ohinemuri County	200 0 0	6 0 0
Mr. Olderog, Arahura	54 18 0	16 4 0
Miners' Association, Ross (J. Smith and party)	135 0 0	61 7 6
Extension of low-level tunnel, Boatman's	300 0 0	137 7 11
Prospecting-tunnel, south side Inangahua River	60 0 0	25 0 0
Prospecting Association, Mokihinui	40 0 0	15 0 0
Miners' Association, Kumara (John Kane)	9 0 0	1 2 6
Prospecting Association, Invercargill	150 0 0	68 13 6
Miners' Association, Kuaotunu	40 0 0	13 2 6
Miners' Association, Ross (Waylen and party)	50 0 0	16 13 0
Prospecting Association, Coromandel (Leahy and others)	200 0 0	100 0 0
Adit-level, Maungatawhiri Creek (G. B. Osmond)	120 0 0	68 17 0
Bay of Islands County Prospecting, Pokaka	112 13 0	112 13 0
Prospecting Russell's Outcrop	100 0 0	100 0 0
Fox's River Prospecting Association (A. T. Bate, secretary)	19 10 0	19 10 0
Buller County (Newton and party, shaft, Ballarat Terrace)	22 15 0	22 15 0
Buller County (Spence and party)	19 10 0	19 10 0
Wairau Miners' Association	50 0 0	48 4 0
Miners' Association, Nelson Creek (Thrower and Potts)	45 0 0	45 0 0
Miners' Association, Dillmanstown (Turnbull and others)	7 10 0	7 10 0
Miners' Association, Ross (Gagliardi and party)	64 18 0	64 18 0
Miners' Association, Ross (Allen and Son)	40 0 0	20 0 0
Miners' Association, Greenstone (Black and party)	27 0 0	27 0 0
Miners' Association, Cardrona	40 0 0	40 0 0
Miners' Association, Lowburn (E. Murrell)	20 0 0	13 5 0
Puhipuhi Prospecting Association	200 0 0	13 15 0
Thames County (F. and J. Wallis)	97 10 0	35 19 2
Thames County (Sheridan Company's tunnel, Tapu)	180 10 0	30 5 0
Cinnabar Mining Company, Auckland (£1 to £1 10s.)	162 16 9	108 11 2
H. H. Adam's, Waiorongomai	250 0 0	48 3 9
Miners' Association, Ross (Moye and Son)	15 10 0	6 10 6
Westland County (J. Staines)	96 0 0	4 10 0
Westland County (O'Brien and Glynn)	40 0 0	36 10 6
Upper Moutere Road Board	40 0 0	1 16 0
Buller County (Mohan and party)	220 0 0	71 8 6
Buller County (Gardiner and McKay)	56 0 0	24 0 0
Buller County (Negri and others)	43 0 0	29 1 3
Buller County (Scarlett and McHarrie)	39 0 0	18 0 0
Kumara Miners' Association (Scatterini and Anderson)	124 0 0	6 13 6
Kumara Miners' Association (Henley and party)	58 14 0	2 8 0
Kumara Miners' Association (M. Manton)	57 10 0	3 18 9
Kumara Miners' Association (Rogers and Block)	75 0 0	35 6 6
Frying-pan Tail-race	600 0 0	161 11 3
Prospecting Association, Mokihinui (French and others)	58 10 0	11 5 0
Prospecting Association, Westport	432 6 0	197 9 8
Dyer and party, Kuaotunu	120 0 0	37 16 0
Gillam's Gully Prospecting Association (Bramhall and party)	60 0 0	12 3 0
Miners' Association, Riverton	100 0 0	32 0 0
Kennedy-Waikaia Miners' Association, Invercargill	100 0 0	9 0 0
Inangahua District Miners' Association	100 0 0	25 17 6
New El Dorado Sluicing Company, Fat Boys, Criffel	300 0 0	94 4 9
Miners' Association, Greenstone (O'Donnell and party, and J. Pope)	75 0 0	30 4 3
Miners' Association, Tinkers, prospecting Matakanui	6 0 0	3 0 0
Chatterbox Tunnel (G. Clapton)	6 0 0	2 17 9
Port Charles Prospecting Association	20 0 0	11 8 0
Miners' Association, Lake Mapourika	17 4 0	7 13 3
Pitchers and Kitto, Anderson's Flat	100 0 0	20 5 11
Miners' Association, Nelson Creek (Kelly and party)	23 5 0	9 18 0
South British Prospecting Association, Lyell	135 0 0	6 15 0
Miners' Association, Ross (A. Zala)	69 0 0	69 0 0
Miners' Association, Ross (McKay and Muir)	39 0 0	39 0 0
Miners' Association, Ross (McKay and Brown)	13 0 0	13 0 0
Miners' Association, Ross (McEwen and McEchnie)	26 0 0	26 0 0
Miners' Association, Ross (C. Porter)	226 0 0	128 0 0
Miners' Association, Riverton	18 0 0	18 0 0
Katikati Prospecting Association	52 0 0	26 0 0
Cornwall, Walker, and party's tunnel, Boatman's	302 10 0	154 14 0
Miners' Association, Greenstone (Crawford and party)	109 7 6	109 7 6
Mararoa Mining Association	18 0 0	18 0 0
Hororata Prospecting Association	30 15 0	30 15 0

List of Works on Goldfields, &c.—*continued.*

Locality and Nature of Works.	Total Cost.	Amount of Contribution paid by Mines Department.
Aids to Prospecting—*continued.*	£ s. d.	£ s. d.
Paparata Road Board (Parker and Piggott)	32 10 0	32 10 0
New Bay of Islands Coal Company, prospecting Moody's outcrop	200 0 0	173 4 3
Longwood Sluicing Company	300 0 0	150 0 0
Red Jack's Miners' Association (Drummond and McDonough)	28 0 0	28 0 0
Kapanga Gold-mining Company (Limited)	20,600 0 0	1,735 3 11
Kuaotunu Prospecting Association	48 10 0	26 0 0
Te Aroha Town Board	100 0 0	37 17 9
Bombay Prospecting Association	40 0 0	16 7 9
Charleston Miners' Association	110 0 0	33 8 6
Buller County (Reaney and Rasmussen)	120 0 0	30 0 0
Buller County (Samuel and party)	100 0 0	5 11 0
Gold-mining League, Westport (McFarlane and others)	39 0 0	13 10 0
Inangahua County (Gabriel and party)	100 0 0	11 11 0
Miners' Association, Dillmanstown (Black and party)	31 10 0	12 0 0
Tapanui Prospecting Association	40 0 0	18 10 0
Miners' Association, Lowburn (Tilliman and party)	57 10 0	42 9 9
Miners' Association, Upper Waikaia	19 10 0	13 0 0
Miners' Association, Nelson Creek (Coll and party)	160 0 0	80 0 0
Main and party's tunnel, Kanieri	200 0 0	188 7 0
Ryan and Son's tunnel, Dillmanstown	42 0 0	21 12 0
R. A. Harcourt's tunnel, Blue Spur	180 0 0	90 0 0
Miners' Association, Ross (Archer and Horseby)	13 0 0	13 0 0
Inangahua County (R. Lees)	2 10 0	2 10 0
Westland County (Rebay and party)	112 0 0	56 0 0
Red Jack's Miners' Association (Drummond and Raynor)	24 0 0	12 0 0
Westland County (McGoveran and party)	50 0 0	37 10 0
Westland County (N. Johnson's tunnel, Fox's Flat)	140 0 0	59 0 5
Miners' Association, Ross (Gagliardi and Son)	70 0 0	17 10 0
Miners' Association, Ross (Marchesi and Scott)	200 0 0	153 15 0
Miners' Association, Greenstone (Dickson and party)	72 0 0	15 18 0
	64,196 18 8	21,973 14 5
Water-races.		
Water-main, Bull's Battery	350 0 0	100 0 0
Round Hill Water-race	200 19 0	133 19 4
Tomkiss's Water-race	100 0 0	100 0 0
Cardrona Sludge-channel	100 0 0	50 0 0
New water-mains, Thames Water-race	1,479 10 4	739 15 2
Nelson Creek	957 16 9	957 16 9
Mikonui Water-race	14,279 16 4	14,279 16 4
Brown and party, Kumara	90 0 0	22 10 0
Randall Creek Water-race	222 2 3	222 2 3
Thames Water-race	1,250 0 0	1,250 0 0
Contingencies	659 12 8	659 12 8
Randall Creek Water-race	100 15 0	100 15 0
Quinn's Creek Water-race	70 0 0	70 0 0
Wainihinihi Water-race	84 3 8	84 3 8
Survey, water-race, Ninety-mile Beach	65 6 7	65 6 7
Improving water-supply, Oamaru	1,250 0 0	1,150 7 2
Roaring Meg Water-race (Jones, Baxter, and party)	1,600 0 0	800 0 0
Sulky Gully Water-race	504 0 0	218 0 0
Gentle Annie Creek, Mata (R. Kelly)	200 0 0	40 0 0
Purchase Byrne, O'Hallahan, and Murdoch's water rights	35 0 0	35 0 0
Argyle Water-race	8,453 15 1	8,453 15 1
	32,052 17 8	29,533 0 0
Drainage- and Tailings-channels.		
Drainage-channel, Lawrence (total cost, approximate)	3,000 0 0	2,000 0 0
Subsidy towards purchase of Messrs. Laidlaw and Crawford's freehold in Spotti's Creek, to allow tailings to be deposited (Tinker's Diggings)	500 0 0	400 0 0
Damage by floods, Thames	1,000 0 0	500 0 0
Sludge-channel, Smith's Gully, Bannockburn	1,000 0 0	251 1 0
Round Hill Sludge-channel survey	52 19 7	52 19 7
Compensation to J. Costello, damage done by tailings	788 0 0	788 0 0
Long Gully Sludge-channel	150 0 0	100 0 0
New Pipeclay Gully Sludge-channel	1,547 18 0	773 19 0
Kumara Sludge-channel No. 2	2,762 17 2	2,762 17 2
Ophir Tail-race	2,300 0 0	1,150 0 0
Lawrence Drainage-channel	1,150 0 0	956 14 0
Tailings-outlet, Maerewhenua	1,595 4 0	1,595 4 0
Ross Sludge and Storm-water Channel	1,675 10 6	1,675 10 6
Kuaotunu Sludge-channel (£1 for £1)	400 0 0	200 0 0
Branch tail-race to No. 4 Channel	100 0 0	100 0 0
Rimu Drainage-channel	500 0 0	191 19 6
Kumara Sludge-channel No. 5	5,006 15 9	5,006 15 9
	23,529 5 0	18,505 0 6

LIST of WORKS on GOLDFIELDS, &c.—*continued.*

Locality and Nature of Works.	Total Cost.			Amount of Contribution paid by Mines Department.		
AID TOWARDS THE TREATMENT OF ORES.	£	s.	d.	£	s.	d.
Testing-plant, School of Mines, Thames	1,200	0	0	600	0	0
Testing minerals, Dunedin Exhibition	142	8	9	142	8	9
Testing-battery, Mercury Bay	915	1	4	915	1	4
	2,257	10	1	1,657	10	1
AID TOWARDS CONSTRUCTION OF TELEPHONE-LINES.						
Bannockburn to Nevis	60	0	0	50	0	0
WORKS WHOLLY CONSTRUCTED BY MINES DEPARTMENT.						
Construction of road, Arrowtown to Macetown	9,270	6	8	9,270	6	8
Road to open up Woodstock Goldfield	1,000	0	0	1,000	0	0
Ahaura to Amuri	2,504	19	7	2,504	19	7
Waikaia Bush Road	1,000	0	0	1,000	0	0
Waitahuna Bridge	750	0	0	750	0	0
Merrivale tracks	500	0	0	500	0	0
Mokihinui to Specimen Creek	1,238	7	5	1,238	7	5
Wilberforce Quartz-reef Road	1,830	17	7	1,830	17	7
Opening Mokau River	552	8	0	552	8	0
Lyell to Mokihinui	5,098	8	6	5,098	8	6
Brighton to Seventeen-mile Beach	1,789	7	2	1,789	7	2
Wangapeka to Karamea	2,000	0	0	2,000	0	0
Hatter's Terrace to Bell Hill	500	0	0	500	0	0
Cedar Creek Road	3,000	0	0	3,000	0	0
Owen Valley Road	2,208	9	2	2,208	9	2
Cobden to Seventeen-mile Beach	3,036	1	4	3,036	1	4
Cedar Creek Road	1,500	0	0	1,500	0	0
Bridle-track to Upper Anatoki	722	8	0	722	8	0
Whangamata Road	141	10	6	141	10	6
Karangahake through Gorge	1,000	0	0	1,000	0	0
Arthur's Point to Skipper's	12,167	4	1	12,167	4	1
Tracks to Coal Island	54	6	3	54	6	3
Grey Valley to Teremakau	900	0	0	900	0	0
Rimu to New Rush	829	17	9	829	17	9
Tapu to Waikawau	750	10	0	750	10	0
Puhipuhi Road	1,396	17	9	1,396	17	9
Jackson's Bay to Cascade and Gorge River district	5,310	10	11	5,310	10	11
Improving roads and tracks, Collingwood to Takaka and Motueka	10,905	8	11	10,905	8	11
Tramway from New Find to Waitekauri	100	0	0	100	0	0
Havelock–Mahakipawa Dray-road	1,311	9	0	1,311	9	0
Mokihinui to Wanganui	200	0	0	200	0	0
Burnett's Face to Coalbrookdale	200	0	0	200	0	0
Deadman's to Christmas Terrace	20	0	0	20	0	0
Low-level Alpine Claim, Lyell	80	0	0	80	0	0
Bowen Road to Salt-water Beach	60	0	0	60	0	0
Repairing damage done by floods, Westland County	100	0	0	100	0	0
Deviation of road at Kanieri Forks	140	0	0	140	0	0
Road up Dart River	200	0	0	200	0	0
Kuaotunu to Mercury Bay	350	0	0	350	0	0
Thames to Manaia	500	0	0	500	0	0
Cobden to Seventeen-mile Beach	400	0	0	400	0	0
Bridge over Mahinapua Creek	503	16	10	503	16	10
Track up Waiho River	105	0	0	105	0	0
Haast Ferry to Glue-pot	126	0	0	126	0	0
Paeroa–Waihi Road	114	0	0	114	0	0
Waitekauri to New Find	250	0	0	250	0	0
Mahakipawa to Waikakaho	183	12	1	183	12	1
Oparara through gorge to gold-workings	150	0	0	150	0	0
Okira Bridge, at Dirty Mary's Creek	100	0	0	100	0	0
Lagoon Bridge	100	0	0	100	0	0
Widening Cape Terrace Road	100	0	0	100	0	0
Deviation, Granville Road	70	0	0	70	0	0
Tucker's Flat Road	247	18	7	247	18	7
Dillman's–Larrikin's Road	125	15	0	125	15	0
Track at Kanieri Lake and McIntosh Falls, Lake Mahinapua	195	4	6	195	4	6
Extension of road, Rimu to Shallow Rush	150	0	0	150	0	0
Gillam's Gully Track	149	16	0	149	16	0
McKay's Creek, Kokatahi Track	100	0	0	100	0	0
Aorere Valley to Karamea and Mokihinui	29,938	1	2	29,938	1	2
Arrowtown to Macetown	450	0	0	450	0	0
Nelson Creek Bridge	100	0	0	100	0	0
Cascade to Barn Bay Road	411	7	0	411	7	0
Repairs to decking, Tapu Wharf	100	0	0	100	0	0
Waitekauri Battery from Junction–Waihi Road	150	0	0	150	0	0
Deep Creek, Wakamarina, to Empire City Company's claim	50	0	0	50	0	0
Track to diggings at Cape Foulwind	497	11	0	497	11	0
Bridge over Fox's River at Brighton	100	0	0	100	0	0
Totara Bridge	255	0	0	255	0	0
Road from Mokihinui Bridge to gold-workings	75	0	0	75	0	0
Clearing two miles of old track from right-hand branch of Kanieri River to Gentle Annie Terrace	13	0	0	13	0	0
Extending horse-track to Blackball Creek	500	0	0	500	0	0
Matawai to Kaimarama	150	0	0	150	0	0
Tiki to Mahakirau	250	0	0	250	0	0
Karangahake Gorge to Waihi	350	0	0	350	0	0

LIST of WORKS on GOLDFIELDS, &c.—*continued.*

Locality and Nature of Works.	Total Cost.			Amount of Contribution paid by Mines Department.		
WORKS WHOLLY CONSTRUCTED BY MINES DEPARTMENT—*continued.*	£	s.	d.	£	s.	d.
Upper Tararu Road	471	10	3	471	10	3
Red Hill Road	249	8	1	249	8	1
Repairs, Nile Bridge	1,131	2	6	1,131	2	6
Miller's Flat to Skipper's	580	0	0	580	0	0
Cobden to Coal Creek	375	0	0	375	0	0
Track to New Find, Tairua	47	11	6	47	11	6
Cedar Creek Dray-road	466	11	2	466	11	2
Road to Matarangi Goldfield	75	0	0	75	0	0
Repairs, Manaia Track	90	0	0	90	0	0
Upper Township School Bridge	50	0	0	50	0	0
Tiki Bridge across Waiau	256	0	0	256	0	0
Scott's Bridge	175	0	0	175	0	0
Oteau Bridge	150	0	0	150	0	0
Mercury Bay–Kaimarama Road	50	0	0	50	0	0
Stoney Creek Track	15	0	0	15	0	0
Road to mines, Waiomo	50	0	0	50	0	0
Upper Hill Track to branch track, Waiorongomai	30	0	0	30	0	0
Canadian Gully Bridge, and repairs to tunnel on horse-grade, Waiorongomai	70	0	0	70	0	0
Waiorongomai Road	100	0	0	100	0	0
Track from Slate River to Rocky	225	0	0	225	0	0
Pack-track to Killdevil	100	0	0	100	0	0
Repairs, Wangapeka Road towards Crow Diggings	153	0	7	153	0	7
Repairing flood-damages, Grey County	370	0	0	370	0	0
Taipo Track to Seven-mile	194	5	8	194	5	8
Repairs, Totara Bridge	336	0	0	336	0	0
Repairs, Kanieri Lake Road	80	0	0	80	0	0
Mercury Bay to Whenuakite and Boat Harbour	150	0	0	150	0	0
Tiki to Gumtown, *viâ* Kaimarama	160	0	0	160	0	0
Driving Creek to Cabbage Bay, and Driving Creek to Cape Colville	660	0	0	660	0	0
Tiki to Waikawau	600	0	0	600	0	0
Paeroa to Te Aroha	365	0	0	365	0	0
Puriri to east side of range	596	19	6	596	19	6
Onamalutu to Wakamarina Forks	400	0	0	400	0	0
Waimangaroa to Denniston	100	0	0	100	0	0
Road to Lyell's Creek Extended Company's tunnel	200	0	0	200	0	0
Jackson's Bay to Cascade	1,110	8	1	1,110	8	1
Bridge over Ogilvie's Creek	150	0	0	150	0	0
Gillam's Gully Track	220	0	0	220	0	0
Bridge over Kanieri River at Kokatahi	467	10	10	467	10	10
Road to Oparara Diggings	100	0	0	100	0	0
Millerton Road	249	0	3	249	0	3
Waiau to Preservation Inlet	7,961	19	6	7,961	19	6
Hatter's Terrace to Haupiri	1,650	0	0	1,650	0	0
Grey River to Moonlight	530	0	0	530	0	0
Blackball Track	1,185	12	5	1,185	12	5
Ahaura–Kopara Road	400	0	0	400	0	0
Mackley's to Waipuna Terrace	100	0	0	100	0	0
Footbridge over Blackball Creek	150	0	0	150	0	0
Waipapa to Waikawa	200	0	0	200	0	0
Waipapa to Six-mile	100	0	0	100	0	0
Drain at Adamson's	50	0	0	50	0	0
Maruia Track, between Reefton and Maruia	50	0	0	50	0	0
Sledge-track to Langdon Reefs	30	0	0	30	0	0
Track to Blackball Township, repairs	40	0	0	40	0	0
Track, Old Man Range	50	0	0	50	0	0
Road to gold discovery near Blue Spur	45	0	0	45	0	0
Bartlett's Creek Track	200	0	0	200	0	0
Prospecting-track, Brunnerton to Paparoa	125	0	0	125	0	0
Extension Seddon's Terrace Track to new claim	208	10	6	208	10	6
West Tokatea Road	50	0	0	50	0	0
Waitaia Battery Road	150	0	0	150	0	0
Preece's Point Road	150	0	0	150	0	0
Tokatea–Kennedy Bay Road	100	0	0	100	0	0
Main Cabbage Bay Road	50	0	0	50	0	0
Hooker's to Mercury Bay	100	0	0	100	0	0
Opeto Road	100	0	0	100	0	0
Blagrove's Road	400	0	0	400	0	0
Cemetery–Cabbage Bay Road	100	0	0	100	0	0
Rails for Coromandel Wharf	31	5	0	31	5	0
Culverts, Tiki Road	100	0	0	100	0	0
Soldier's Creek Road	198	5	0	198	5	0
Road to Barrytown	300	0	0	300	0	0
Tracks to western sounds	7,307	17	11	7,307	17	11
Road to R. Kelly's claim, Gentle Annie Creek	100	0	0	100	0	0
Waitekauri to New Find	250	0	0	250	0	0
Paeroa Mill Road	50	0	0	50	0	0
Owharoa to Waitawheta	50	0	0	50	0	0
Deviation Road, Earl's Hill	200	0	0	200	0	0
Waihi to Katikati	75	0	0	75	0	0
Bridge over Slate River	50	0	0	50	0	0
Pack-track to Glover's Flat, Lower Anatoki	50	0	0	50	0	0
Clearing Karaka Creek of flood-damage	50	0	0	50	0	0
Track up right-hand branch of Cullen's Creek	25	0	0	25	0	0
Footbridge, Waimangaroa River	50	0	0	50	0	0
Track up Callary Branch, Waiho River	70	0	0	70	0	0

LIST of WORKS on GOLDFIELDS, &c.—*continued.*

Locality and Nature of Works.	Total Cost.			Amount of Contribution paid by Mines Department.		
WORKS WHOLLY CONSTRUCTED BY MINES DEPARTMENT—*continued.*	£	s.	d.	£	s.	d.
Converting Wilson's Lead Track, Addison's, into a dray-road	400	0	0	400	0	0
Cabbage Bay to mines	400	0	0	400	0	0
Coromandel to Kuaotunu	2,070	0	0	2,070	0	0
Manaia to mines	100	0	0	100	0	0
Whitianga to Mahakirau	300	0	0	300	0	0
Whangapoua Mill Road	100	0	0	100	0	0
Kuaotunu Bridge	200	0	0	200	0	0
Granity Creek to Ngakawau	100	0	0	100	0	0
Crow Diggings Track	527	8	2	527	8	2
Road to diggings, Cape Foulwind	100	0	0	100	0	0
Ngahere to Blackball	600	0	0	600	0	0
Fencing land, Blackball Road	110	0	0	110	0	0
Prospecting-track, Greek's Gully to Kanieri Forks	150	0	0	150	0	0
Repairing Jones's Creek and Donohue's Storm-channels	100	0	0	100	0	0
Deviation, Pleasant Creek Track	130	0	0	130	0	0
Road-works at Ohaeawai	500	0	0	500	0	0
Mahakirau Creek Road	200	0	0	200	0	0
Puriri to mines	100	0	0	100	0	0
Katikati–Waihi Road	150	0	0	150	0	0
Pack-track from Kerikeri	50	0	0	50	0	0
Track to Waitakohe Goldfield	50	0	0	50	0	0
Repairing bridges to mines, Te Puke	250	0	0	250	0	0
Helena Bay to Whakapara Railway-station	100	0	0	100	0	0
Gordon Settlement to Waharoa	600	0	0	600	0	0
Waiorongomai Road	300	0	0	300	0	0
Approach to railway-bridge, Te Aroha	150	0	0	150	0	0
Upper Waitekauri Bridge	250	0	0	250	0	0
Junction Waihi Road to New Find, Waitekauri	328	8	0	328	8	0
Repairing bridges, Doctor's and Staunton's Creeks	200	0	0	200	0	0
Four-mile Bridge	100	0	0	100	0	0
Fox's Bridge	100	0	0	100	0	0
Fairdown–Waimangaroa	200	0	0	200	0	0
Charleston–Nine-mile Beach	200	0	0	200	0	0
Road, Promised Land–Karamea	550	0	0	550	0	0
Karamea Bridge and approaches	3,565	19	8	3,565	19	8
Approaches, Matakitaki Bridge	279	15	0	279	15	0
Snowy Creek Bridge	300	0	0	300	0	0
Big River Road	4,571	0	0	4,571	0	0
Footbridge across by-wash, Ngahere–Blackball Ferry	210	0	0	210	0	0
Track to Healey's Gully	90	0	0	90	0	0
Track, Lancashire Flat to head of Clearwater Creek	50	0	0	50	0	0
Granville Road	100	0	0	100	0	0
Footbridges, Blackwater and Greenstone	300	0	0	300	0	0
Brown's Terrace to Arnold	200	0	0	200	0	0
Protective works, main Grey Bridge	191	0	0	191	0	0
Extension, Tucker's Flat Road	103	2	6	103	2	6
Butcher's Creek Bridge, Kanieri Lake Road	129	17	6	129	17	6
Kapitea Creek Bridge, Lamplough Track	118	0	0	118	0	0
Widening Milltown Track to Humphrey's Gully	600	0	0	600	0	0
Pack-track, Seddon's Terrace to Eel Creek	246	17	6	246	17	6
New bridge, Kapitea Creek, Loop-line Road	30	8	7	30	8	7
Stribbing's Creek Bridge	70	8	11	70	8	11
Widening Seddon's Terrace Road extension	199	0	0	199	0	0
Compensation, Larrikin's Road	56	0	0	56	0	0
Garston to Nevis	1,965	17	2	1,965	17	2
Nevis Valley Road	400	0	0	400	0	0
Okarito River Bridge	300	0	0	300	0	0
Drainage, Stafford Township	399	17	5	399	17	5
Wataroa Bluff Track	194	4	8	194	4	8
Wangapeka Track, Rolling River–Kiwi Creek	149	19	10	149	19	10
Tracks, Stewart Island	718	7	8	718	7	8
Widening Lake Mapourika–Waiho Road	782	6	8	782	6	8
Roads, Great Barrier	604	4	2	604	4	2
Riversdale–Waikaia	200	0	0	200	0	0
Prospecting-track, Lyell–Larry's	100	0	0	100	0	0
Track to New Find, Victoria Range	500	0	0	500	0	0
Extending road into bush, Addison's	100	0	0	100	0	0
Clearing rocks and easing curves, Nine- and Ten-mile Bluffs	129	6	11	129	6	11
Repairs flood-damages, South Westland	100	0	0	100	0	0
Hungerford's Bridge	444	11	5	444	11	5
Waitangi Bluff Track	99	18	9	99	18	9
Track from Cedar Creek Road to Ford and Thompson's claim	20	0	0	20	0	0
Repairs Mount Greenland Track	50	0	0	50	0	0
Ross Road, towards Ranges	199	12	6	199	12	6
Repairs pack-track, Cedar Creek	100	0	0	100	0	0
Kinsella's land, taken for Blackball Road	5	11	0	5	11	0
Maratoto to mines	149	5	6	149	5	6
Hatter's Terrace–Haupiri	200	0	0	200	0	0
Upper Waiotahi Road	492	10	0	492	10	0
Inland from Omahu	400	0	0	400	0	0
Gannon's to Painkiller	196	10	6	196	10	6
Netherton Road	28	14	6	28	14	6
Repairs, Tapu Creek Road	66	0	0	66	0	0
Repairs, Karaka Creek Road	40	0	0	40	0	0

LIST of WORKS on GOLDFIELDS, &c.—*continued.*

Locality and Nature of Works.	Total Cost.			Amount of Contribution paid by Mines Department.		
WORKS WHOLLY CONSTRUCTED BY MINES DEPARTMENT—*continued.*	£	s.	d.	£	s.	d.
Gravelling road through Mr. Adams's property	100	0	0	100	0	0
Gravelling Onamalutu Track	100	0	0	100	0	0
Road to Fenian Creek, Karamea	250	0	0	250	0	0
Westport and Mokihinui Railway-line to Jones's Creek	100	0	0	100	0	0
Footbridge, Notown Creek	50	0	0	50	0	0
Wood's Creek Bridge	80	0	0	80	0	0
Maori Creek Bridge	50	0	0	50	0	0
Main South Road to Mikonui Beach	15	15	0	15	15	0
River-protection works, Te Aroha	200	0	0	200	0	0
Drains, Maratoto	100	0	0	100	0	0
Repairs, Mata Bridge	300	0	0	300	0	0
Roads, Tauranga County	1,226	17	5	1,226	17	5
Re-metalling Wakamarina Road	500	0	0	500	0	0
Pakawau Bush Road	425	0	0	425	0	0
Scott's Creek Bridge	170	0	0	170	0	0
Richmond–Collingwood	250	0	0	250	0	0
Deadman's Creek–Christmas Terrace	250	0	0	250	0	0
Denniston–Cascade Creek	100	0	0	100	0	0
Big Totara River Bridge	450	0	0	450	0	0
Little Totara River Bridge	350	0	0	350	0	0
Twins Road	100	0	0	100	0	0
Track up Four-mile and Nile Rivers	250	0	0	250	0	0
Culverts, Devil's Creek	100	0	0	100	0	0
Moonlight–Paparoa	100	0	0	100	0	0
Footbridges, Cobden–Seven-mile Road	342	10	0	342	10	0
Grey River–Moonlight	500	0	0	500	0	0
Bridge, Brandy Jack's Creek	150	0	0	150	0	0
Track up Ten-mile Creek	100	0	0	100	0	0
Road, Cobden to Warren's and Ten-mile Bluff to Barrytown	500	0	0	500	0	0
Cape Terrace Road continuation	150	0	0	150	0	0
Lake Brunner Road to Maori Creek	150	0	0	150	0	0
Hampden to Horse Terrace	3,450	18	6	3,450	18	6
Track to Adamstown	375	4	0	375	4	0
Brunnerton–Paparoa	50	0	0	50	0	0
Waikupakupa Ocean Beach to Main Road	100	8	0	100	8	0
Totara River to Farmer's Creek	194	13	0	194	13	0
Doughboy Road	300	0	0	300	0	0
Widening and repairing Lamplough Track	145	15	0	145	15	0
Extension, Gillam's Gully Track	100	0	0	100	0	0
Adair's Track, Mahinapua Road	150	0	0	150	0	0
Mahinapua and South Terrace Track	250	0	0	250	0	0
Veronica Creek Track	200	0	0	200	0	0
Waipori–Berwick Road	1,976	18	9	1,976	18	9
Roxburgh-Clyde	500	0	0	500	0	0
Orepuki–Block I., Longwood	500	0	0	500	0	0
Tableland horse-track	199	9	3	199	9	3
Landing Creek Bridge	289	16	6	289	16	6
Walker's Creek Bridge	214	12	2	214	12	2
Greenstone–Teremakau	240	0	3	240	0	3
Bell Hill Road	199	9	4	199	9	4
Bridge over Kanieri River	94	5	0	94	5	0
Main South Road to Mikonui Beach	84	15	0	84	15	0
Deviation, Larrikins Road	1,375	4	2	1,375	4	2
Pine-tree Road	45	10	7	45	10	7
Wire Bridge, German Gully Track	89	19	6	89	19	6
Road-formation, Waitekauri to Cross Road	271	11	11	271	11	11
Bridge, Mariposa Battery Road	24	0	0	24	0	0
Crosbie Settlement Road	50	0	0	50	0	0
Waitaia Battery-site to Low Level	50	0	0	50	0	0
Repairs, Tauranga–Te Puke	25	2	6	25	2	6
Rockville–Slate River	51	0	0	51	0	0
Aorere Main Road, gravelling	60	0	0	60	0	0
Ferntown footbridges and gravelling	48	0	0	48	0	0
Swamp Road, Ferntown	30	0	0	30	0	0
Clearing slips, Seventeen-mile Bluff	150	0	0	150	0	0
Clearing slips, Nelson–Grey–Ross Road	115	0	0	115	0	0
Bridges over Raleigh Creek (3)	324	10	0	324	10	0
Hampden Cemetery to School-house, Murchison	345	1	6	345	1	6
Squaretown Bridge over Little Grey River	75	0	0	75	0	0
Berwick–Waipori, repairs	75	0	0	75	0	0
Beaumont–Miller's Flat	250	0	0	250	0	0
Track to Police Station, Seddonville	37	19	2	37	19	2
Improving track, Sealer's Creek	49	12	8	49	12	8
Whakapara–Puhipuhi	450	0	0	450	0	0
Kiripaka to Coal-mines	80	0	0	80	0	0
Waiorongomai Road	150	0	0	150	0	0
Tiki–Opitonui	250	0	0	250	0	0
Taumatawahine Bridge	300	0	0	300	0	0
Cemetery Road, Kuaotunu	100	0	0	100	0	0
Tiki–Matawai	45	0	0	45	0	0
Puriri–Tairua	1,135	14	6	1,135	14	6
Beach Road, Thames	100	0	0	100	0	0
Puru Creek Road	400	0	0	400	0	0
Tararu Creek Bridge	100	0	0	100	0	0

LIST of WORKS on GOLDFIELDS, &c.—*continued.*

Locality and Nature of Works.	Total Cost.			Amount of Contribution paid by Mines Department.		
WORKS WHOLLY CONSTRUCTED BY MINES DEPARTMENT—*continued.*	£	s.	d.	£	s.	d.
Turua–Netherton	200	0	0	200	0	0
Te Aroha Bridge	250	0	0	250	0	0
Bartlett's Creek Road	449	4	7	449	4	7
Mount Patriarch Road	200	0	0	200	0	0
Takaka River Footbridge	250	0	0	250	0	0
Karamea Track	250	0	0	250	0	0
Bainham–Upper Aorere	200	0	0	200	0	0
Shaggery Road	100	0	0	100	0	0
Seddonville–Mokihinui Mine	150	0	0	150	0	0
Seddonville–Mokihinui	920	0	0	920	0	0
Westport–Mokihinui	750	0	0	750	0	0
Mokihinui to Reefs, widening	500	0	0	500	0	0
Mokihinui to Wanganui, improving	600	0	0	600	0	0
Costello's Hill Road, Charleston	550	0	0	550	0	0
Lyell–Eight Mile, widening	400	0	0	400	0	0
Addison's Road to Buller Road	500	0	0	500	0	0
Lyell–Victoria Range	450	0	0	450	0	0
Nile Saddle–Maori Creek	150	0	0	150	0	0
Seddonville–Cardiff	100	0	0	100	0	0
Painkiller–Murray Creek	844	7	6	844	7	6
Snowy Creek to Reefs	450	0	0	450	0	0
Marina Road and Track *viâ* Caslani's	188	0	0	188	0	0
Little Grey River Bridge	400	0	0	400	0	0
Improving crossings, Waitahu River and Road, up Kirwan's Creek	450	0	0	450	0	0
Fagan's Creek, Barrytown, to Paparoa	425	0	0	425	0	0
Nelson Creek Bridge	950	0	0	950	0	0
Callaghan's Creek Bridge	250	0	0	250	0	0
Mosquito–Maori Creek	100	0	0	100	0	0
Deviation, Westbrook–Teremakau	450	0	0	450	0	0
Bridge, Cobden–Brunner Road	125	10	0	125	10	0
Moonlight Track, deviation	140	0	0	140	0	0
Lake Hochstetter Track	80	0	0	80	0	0
Totara River to Constitution Hill	123	1	0	123	1	0
Teremakau–Paroa	250	0	0	250	0	0
Back Creek Road, deviation	200	0	0	200	0	0
Browning's Pass Track	100	0	0	100	0	0
Blue Spur Creek Bridge	29	8	0	29	8	0
Waipori Bush Road	300	0	0	300	0	0
Young Hill Creek Road	150	0	0	150	0	0
Nevis Valley Road	200	0	0	200	0	0
Repairs to road between Sections 17 and 45, Waikaka	100	0	0	100	0	0
Skippers–Bullendale	200	0	0	200	0	0
Picton–Grove	862	5	0	862	5	0
Wangapeka–Wanganui	2,324	17	2	2,324	17	2
Stafford–Awatuna	1,029	12	4	1,029	12	4
Karangarua Bridge	432	9	6	432	9	6
Okuru River Ford Track	342	18	8	342	18	8
Gillespie's Bluff Track	151	14	1	151	14	1
Maori River Road	149	19	6	149	19	6
Clifden Bridge, Waiau	1,115	3	0	1,115	3	0
Orepuki–Preservation Inlet	3,355	14	10	3,355	14	10
Blind Bay–Whangaparapara	644	1	5	644	1	5
Mount Hercules deviation, Great South Road	1,119	4	6	1,119	4	6
Ahaura–Orwell Creek	291	0	5	291	0	5
Contingencies	893	11	7	893	11	7
	226,827	14	3	226,827	14	3
ROADS TO OPEN UP MINES OTHER THAN GOLD.						
Aniseed Valley to Champion Copper-mine	4,963	10	6	4,116	10	6
Richmond Hill to copper-mine	315	16	0	209	4	0
Track, Ohinemuri Coal-seam	267	3	4	133	11	8
Road, Kanieri Coalfield	600	0	0	300	0	0
	6,146	9	10	4,759	6	2
TRACKS TO OPEN UP MINERAL LANDS.						
Glory Harbour to Kopack	50	0	0	50	0	0
Port Pegasus Track	155	7	6	155	7	6
Removing snags and felling timber, Mokau River	40	0	0	40	0	0
Ngakawau Footbridge	80	0	7	80	0	7
	325	8	1	325	8	1
REPAIRING FLOOD-DAMAGES.						
Thames Borough	500	0	0	500	0	0
ARTESIAN-WELL BORING.						
Maniototo Plains	800	0	0	800	0	0

LIST of WORKS on GOLDFIELDS, &c.—*continued.*

Locality and Nature of Works.	Total Cost.			Amount of Contribution paid by Mines Department.		
PROSPECTING DEEP LEVELS.	£	s.	d.	£	s.	d.
Thames-Hauraki Goldfields (Limited), Queen of Beauty shaft	50,500	0	0	25,000	0	0
Thames-Hauraki Goldfields (Limited), Queen of Beauty shaft, inspector's fee ..	500	0	0	500	0	0
	51,000	0	0	25,500	0	0
RESUMPTION OF LAND FOR MINING.						
Resumption of J. Holmes's land at Kumara for a tailings-site	300	0	0	300	0	0
Resumption of O'Neil and McCormack's land at Back Creek..	562	7	0	562	7	0
Purchase Cassrell and Bennett's leaseholds, Paeroa Township	2,250	0	0	2,250	0	0
	3,112	7	0	3,112	7	0

Summary of Works.

	£	s.	d.	£	s.	d.
Roads (subsidised)—						
Bay of Islands County	2,092	0	0	1,351	0	0
Coromandel County	18,686	3	9	11,220	15	10
Te Aroha Town Board	334	0	0	167	0	0
Thames County	13,224	15	11	7,559	7	5
Thames Borough	2,875	19	2	1,763	0	0
Ohinemuri County	9,057	17	9	4,110	15	1
Piako County	21,418	2	3	14,116	6	10
Katikati Road Board	468	0	0	234	0	0
Hutt County	959	16	6	435	17	6
Marlborough County	1,715	4	0	933	18	8
Waimea County	520	0	0	260	0	0
Collingwood County	2,431	1	8	1,294	9	10
Buller County	10,338	1	4	5,705	16	8
Inangahua County	17,552	14	8	10,530	17	10
Grey County	19,119	4	0	11,755	13	2
Westland County	10,558	15	6	6,596	6	1
Taieri County	499	15	0	333	3	4
Lake County	2,651	6	1	1,532	14	6
Tuapeka County	14,145	7	8	8,312	3	8
Cromwell Borough	200	0	0	100	0	0
Wallace County	1,309	6	0	662	19	8
Vincent County	1,532	0	0	850	0	0
Maniototo County	518	10	0	332	0	0
Fiord County	300	0	0	200	0	0
Waitaki County	41	12	0	20	16	0
Southland County	2,355	0	0	1,426	7	4
	154,904	13	3	91,805	8	11
Diamond and other drills	5,170	11	4	3,428	11	4
Wharves	435	15	9	285	15	9
Aids to prospecting	64,196	18	8	21,973	14	5
Water-races	32,052	17	8	29,533	0	0
Drainage- and tailings-channels	23,529	5	0	18,505	0	6
Aid towards treatment of ores	2,257	10	1	1,657	10	1
Roads wholly constructed by Mines Department	226,827	14	3	226,827	14	3
Roads to open up mines other than gold	6,146	9	10	4,759	6	2
Tracks to open up mineral lands	325	8	1	325	8	1
Repairing flood-damages	500	0	0	500	0	0
Artesian-well boring, Maniototo Plains	800	0	0	800	0	0
Resumption of land for mining	3,112	7	0	3,112	7	0
Aid towards construction of telephone-lines	60	0	0	50	0	0
Prospecting deep levels	51,000	0	0	25,500	0	0
	571,319	10	11	429,063	16	6

RETURN showing the VALUE of the SALES of WATER, and EXPENDITURE on, and COLLATERAL ADVANTAGES derived from, the Working of the WATER-RACES constructed and maintained by GOVERNMENT during the Year ending 31st March, 1900.

Name of Water-race.	Value of Sales of Water and Channel-fees.	Expenditure on Maintenance.	Profit or Loss.	Cost of Construction.	Total Cost of Construction.	Percentage on Capital invested.	Average Number of Men employed.	Approximate Amount of Gold obtained.	Value of Gold obtained.	Average Weekly Earnings of Men after deducting Value of Sales of Water and Channel-fees.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.			Oz.	£ s. d.	£ s. d.
Waimea	622 13 7	857 10 9	234 17 2*	141,575 3 2	213,281 13 9	..	36·58	1,917	7,476 6 0	3 19 0
Kumara	2,458 15 8	1,904 7 9	554 7 11	49,741 12 5		..	69·66	4,439	17,312 2 0	4 15 9
Kumara Sludge-channel	..	..	..	21,964 18 2		..	..	..	..	..
Nelson Creek	..	..	..	..	90,722 10 8	..	..	..	..	..
Argyle	..	..	..	..	15,151 15 3	..	..	..	..	..
Mikonui	..	..	..	..	25,927 4 6	..	..	..	..	..
Mount Ida	1,870 15 6	1,325 12 2	545 3 4	69,993 4 0	69,993 4 0	..	49·75	3,392	13,059 4 0	5 9 0
Blackstone Hill	93 10 1	16 16 0	76 14 1			..	7·58	150	577 10 0	1 9 6
Callaghan's	240 0 0	140 8 8	99 11 4	6,027 15 6	6,027 15 6	..	11	492	1,918 16 0	3 7 0
Totals	5,285 14 10	4,244 15 4	1,040 19 6	289,302 13 3	431,104 3 8	..	..	10,390	40,343 18 0	..

* Loss on working.

WARDEN'S COURT TABLES.

No. 1.

STATEMENT showing the REVENUE of the GOLDFIELDS collected in the several DISTRICTS, and the GOLD DUTY of the COLONY of NEW ZEALAND, for the Period from the 1st January to the 31st December, 1899.

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 ..	185 0 0	5 0 0	..	727 18 9	2 16 0	44 5 6	192 7 6	1,157 7 9
Te Aroha ..	31 10 0	515 1 10	21 0 0	155 9 5	4 5 0	..	2 13 0	729 19 3
Thames ..	483 0 0	8 3 6	1 0 0	1,619 11 4	29 12 0	..	133 14 8	2,275 1 6
Ohinemuri ..	406 0 0	7 10 0	..	3,147 10 2	44 15 0	..	1,762 15 10	5,368 11 0
Puhipuhi ..	11 10 0	4 10 0	..	119 5 8	0 4 0	..	0 5 0	135 14 8
Tauranga ..	2 10 0	..	..	..	..	..	2 0 0	4 10 0
Totals ..	1,119 10 0	540 5 4	22 0 0	5,769 15 4	81 12 0	44 5 6	2,093 16 0	9,671 4 2
NELSON.								
Collingwood ..	69 0 0	..	0 12 6	407 14 8	5 9 0	8 12 0	125 4 3	616 12 5
Westport ..	184 0 0	12 11 2	5 19 0	516 5 3	22 15 6	39 3 0	484 13 1	1,265 7 0
Charleston ..	77 10 0	..	6 5 0	107 12 9	5 9 0	9 11 6	14 0 1	220 8 4
Ahaura ..	225 0 0	..	6 10 0	1,044 17 3	43 0 0	76 15 0	443 14 6	1,839 16 9
Reefton ..	214 10 0	..	6 10 0	1,411 4 9	6 11 0	42 4 0	290 16 9	1,971 16 6
Wangapeka ..	14 10 0	..	..	35 0 0	0 4 0	..	6 6 0	56 0 0
Lyell	64 10 0	7 8 6	0 17 6	238 16 11	4 18 0	1 19 0	66 8 7	384 18 6
Motueka ..	13 10 0	..	..	..	0 13 0	..	7 6 0	21 9 0
Totals ..	862 10 0	19 19 8	26 14 0	3,761 11 7	88 19 6	178 4 6	1,438 9 3	6,376 8 6
MARLBOROUGH.								
Havelock ..	61 0 0	3 0 0	3 16 0	311 13 7	10 15 0	27 19 0	48 17 6	467 1 1
WESTLAND.								
Hokitika and Kanieri	192 10 0	..	3 5 0	432 17 2	3 9 0	31 4 0	17 10 0	680 15 2
Greymouth ..	304 0 0	1 12 6	13 17 6	1,338 2 4	8 19 0	31 10 6	1,342 1 8	3,040 3 6
Ross	60 0 0	..	4 7 6	161 8 6	6 8 0	2 12 0	4 11 6	239 7 6
Stafford and Goldsborough	104 0 0	..	11 13 4	50 3 7	14 12 0	19 11 0	56 11 3	256 11 2
Kumara ..	233 10 0	..	1 17 6	328 2 6	7 10 0	12 18 0	144 1 6	727 19 6
Okarito ..	43 10 0	..	1 0 0	61 1 0	0 16 0	6 7 0	44 18 0	157 12 0
Totals ..	937 10 0	1 12 6	36 0 10	2,371 15 1	41 14 0	104 2 6	1,609 13 11	5,102 8 10
OTAGO.								
Tapanui ..	11 0 0	..	..	8 10 0	0 12 0	1 12 0	0 10 0	22 4 0
Hindon ..	126 0 0	..	..	256 6 6	0 11 0	0 6 0	6 1 0	389 4 6
Naseby ..	137 0 0	18 12 1	38 15 9	866 5 5	28 3 0	51 3 0	219 15 10	1,359 15 1
Maerewhenua ..	8 10 0	1 0 0	2 12 6	23 16 0	3 7 0	9 10 0	20 1 6	68 17 0
Roxburgh Alexandra Clyde .. Black's	361 0 0	11 10 0	14 17 10	2,237 14 6	36 7 0	105 2 6	303 2 6	3,069 14 4
Pembroke ..	16 0 0	..	..	5 4 0	0 9 0	..	..	21 13 0
Cromwell ..	249 15 0	3 12 0	1 2 6	720 2 9	34 6 0	81 17 6	444 11 0	1,535 6 9
Queenstown ..	163 0 0	9 0 0	1 19 0	430 14 8	16 4 0	30 15 0	211 1 1	862 13 9
Arrowtown ..	83 1 0	..	2 15 0	443 10 2	10 5 0	30 6 0	5 5 0	575 2 2
Lawrence ..	241 15 0	0 1 0	7 2 6	881 18 11	7 2 0	79 3 0	268 2 9	1,485 5 2
Waikaia ..	32 0 0	3 0 0	1 2 6	371 4 11	2 15 0	32 6 6	172 3 3	614 12 2
Orepuki, Riverton, Preservation, and Longwood	134 0 0	3 0 0	9 5 0	733 17 2	7 3 0	33 3 0	131 3 4	1,051 11 6
Wyndham ..	17 10 0	..	..	31 12 8	1 10 0	5 1 0	66 15 0	122 8 8
Middlemarch ..	6 10 0	..	1 17 6	15 0 0	0 12 0	..	..	23 19 6
Ashburton ..	5 0 0	..	..	..	..	..	0 5 0	5 5 0
Gore	..	..	..	17 5 9	2 10 0	15 1 0	40 9 0	75 5 9
Totals ..	1,592 1 0	49 15 1	81 10 1	7,043 3 5	151 16 0	475 6 6	1,889 6 3	11,282 18 4
Grand totals ..	4,572 11 0	614 12 7	170 0 11	19,257 19 0	374 16 6	829 18 0	7,080 2 11	32,900 0 11

No. 2.

STATEMENT showing the REVENUE of the GOLDFIELDS collected in the several DISTRICTS, and the GOLD DUTY of the COLONY of NEW ZEALAND, for the Period from 1st January to 31st March, 1900.

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 ..	39 10 0	..	..	224 5 2	..	9 17 0	58 9 3	332 1 5
Te Aroha ..	3 0 0	149 12 6	..	0 3 0	0 14 0	..	1 5 0	154 14 6
Ohinemuri ..	72 10 0	..	..	682 3 11	7 12 0	0 13 0	286 6 9	1,049 5 8
Thames ..	61 10 0	..	..	419 12 4	5 19 0	..	39 13 0	526 14 4
Puhipuhi ..	4 10 0	..	..	58 4 0	0 2 0	..	..	62 16 0
Tauranga ..	1 0 0	..	..	..	..	..	..	1 0 0
Totals ..	182 0 0	149 12 6	..	1,384 8 5	14 7 0	10 10 0	385 14 0	2,126 11 11
NELSON.								
Motueka ..	8 0 0	..	..	..	0 15 0	..	35 0 0	43 15 0
Collingwood ..	15 10 0	..	..	80 0 2	..	3 15 0	10 1 0	109 6 2
Westport ..	41 0 0	2 15 0	0 4 0	164 11 1	3 13 0	11 16 0	135 1 7	359 0 8
Charleston ..	23 10 0	..	0 7 6	37 3 11	1 1 0	2 7 0	2 5 0	66 14 5
Ahaura	56 10 0	..	0 15 0	379 15 11	8 5 0	18 18 0	136 14 0	600 17 11
Reefton	38 0 0	..	0 15 0	188 6 8	0 11 0	10 6 0	53 17 3	291 15 11
Wangapeka ..	2 10 0	..	..	..	..	..	1 5 0	3 15 0
Lyell	8 0 0	3 2 0	..	111 11 6	0 1 0	1 6 0	7 2 0	131 2 6
Totals ..	193 0 0	5 17 0	2 1 6	961 9 3	14 6 0	48 8 0	381 5 10	1,606 7 7
MARLBOROUGH.								
Havelock ..	18 10 0	..	2 14 0	69 17 3	1 18 0	7 13 0	3 16 0	104 8 3
WESTLAND.								
Hokitika and Kanieri	57 10 0	..	0 12 6	195 10 2	7 15 0	14 16 0	1 8 0	277 11 8
Greymouth ..	56 10 0	..	..	981 2 1	0 1 0	11 1 0	97 10 8	1,146 4 9
Ross	19 0 0	..	..	215 5 10	1 14 0	0 4 0	1 10 0	237 13 10
Stafford and Goldsborough	28 10 0	..	2 2 6	21 15 11	2 13 0	6 8 0	154 9 4	215 18 9
Okarito	10 0 0	..	..	..	..	2 11 0	147 12 3	160 3 3
Kumara ..	62 13 0	..	0 2 6	99 14 6	0 7 0	1 1 0	23 7 0	187 5 0
Totals ..	234 3 0	..	2 17 6	1,513 8 6	12 10 0	36 1 0	425 17 3	2,224 17
CANTERBURY.								
Ashburton ..	..	..	..	..	..	..	..	..
OTAGO.								
Middlemarch ..	..	..	..	25 17 6	0 7 0	..	..	26 4 6
Tapanui ..	..	..	..	6 5 6	0 6 0	..	..	6 11 6
Hindon	33 0 0	..	..	18 12 6	..	0 2 0	1 2 0	52 16 6
Naseby	29 0 0	4 2 11	5 17 6	105 14 3	4 3 0	10 6 0	104 3 3	263 6 11
Maerewhenua ..	..	..	0 12 6	14 3 1	1 0 0	0 16 0	1 5 0	17 16 7
Black's .. Alexandra Clyde .. Roxburgh	51 0 0	0 10 0	2 12 6	895 9 5	8 8 0	22 5 0	..	980 4 11
Cromwell ..	45 0 0	0 1 0	0 5 0	403 12 4	5 2 0	12 16 0	..	466 16 4
Queenstown ..	30 0 0	..	..	138 0 4	3 11 0	11 7 0	272 14 4	455 12 8
Arrowtown ..	20 10 0	..	2 0 6	76 14 1	3 14 0	13 19 0	3 12 0	120 9 7
Lawrence ..	48 0 0	0 1 0	..	268 11 10	..	9 2 0	41 7 0	367 1 10
Orepuki, Riverton, Preservation, and Longwood	14 10 0	..	..	229 18 3	..	4 12 0	14 13 0	263 13 3
Pembroke ..	2 10 0	..	..	1 0 0	0 1 0	..	..	3 11 0
Waikaia ..	..	..	..	120 11 8	0 5 0	6 11 0	29 18 0	157 5 8
Wyndham ..	2 0 0	..	..	19 18 11	0 9 0	2 0 0	..	24 7 11
Gore	..	..	..	74 9 6	1 4 0	5 1 0	3 1 0	83 15 6
Totals ..	275 10 0	4 14 11	11 8 0	2,398 19 2	28 10 0	98 17 0	471 15 7	3,289 14 8
Grand totals ..	903 3 0	160 4 5	19 1 0	6,328 2 7	71 11 0	201 9 0	1,668 8 8	9,351 19 8

No. 3.

COMPARATIVE RETURN of REVENUE derived from the GOLDFIELDS in the several DISTRICTS of NEW ZEALAND during the Years 1898 and 1899, showing INCREASE or DECREASE under each Head of Revenue.

District.	Miners' Rights.	Business Licenses, &c.	Water-races, Sluices, &c.	Gold-mining Leases, Rents, and Royalties.	Registration.	Fees and Fines, Wardens' Courts.	Miscellaneous.	Gold Duty.	Totals.
AUCKLAND—	£	£	£	£	£	£	£	£	£
Year 1899	1,120	540	22	5,770	82	44	2,094	16,465	26,137
Year 1898	1,392	321	17	12,154	77	224	2,375	14,219	30,779
Increase	..	219	5	..	5	..	..	2,246	..
Decrease	272	..	..	6,384	..	180	281	..	4,642
NELSON—									
Year 1899	863	20	27	3,762	89	178	1,438	..	6,377
Year 1898	935	4	66	7,272	91	86	2,145	..	10,599
Increase	..	16	..	..	..	92	..	..	..
Decrease	72	..	39	3,510	2	..	707	..	4,222
MARLBOROUGH—									
Year 1899	61	3	4	312	11	28	49	..	468
Year 1898	76	3	4	273	7	23	71	..	457
Increase	..	..	..	39	4	5	..	..	11
Decrease	15	..	..	..	..	..	22	..	..
WESTLAND—									
Year 1899	938	2	36	2,872	42	104	1,610	..	5,104
Year 1898	908	17	56	3,621	69	31	159	..	4,861
Increase	30	..	..	..	..	73	1,451	..	243
Decrease	..	15	20	1,249	27	..	..	..	..
OTAGO—									
Year 1899	1,592	50	82	7,043	152	475	1,889	..	11,283
Year 1898	1,791	117	164	7,368	170	214	1,456	..	11,580
Increase	..	..	..	..	..	261	433	..	..
Decrease	199	67	82	325	18	..	..	..	297
Total Increase	..	153	..	..	..	251	874	2,246	..
Total Decrease	528	..	136	11,729	38	..	..	..	8,907

No. 4.

COMPARATIVE RETURN of the TOTAL AMOUNTS of GOLDFIELDS REVENUE (exclusive of Gold Duty) collected in the several Districts during the Years 1898 and 1899 and the Quarters ending 31st March, 1899 and 1900 respectively, showing the INCREASE or DECREASE in respect of each District.

District.	Years 1898 and 1899.				Quarters ending 31st March, 1899, and 31st March, 1900.			
	1898.	1899.	Increase.	Decrease.	1900.	1899.	Increase.	Decrease.
AUCKLAND.	£	£	£	£	£	£	£	£
Coromandel	2,752	1,157	..	1,595	332	291	41	..
Te Aroha	1,698	730	..	968	155	225	..	70
Thames	4,044	2,275	..	1,769	527	453	74	..
Puhipuhi	275	136	..	139	63	46	17	..
Ohinemuri	7,701	5,369	..	2,332	1,049	1,718	..	669
Tauranga	92	5	..	87	1	18	..	17
NELSON.								
Motueka	97	21	..	76	44	3	41	..
Collingwood	806	617	..	189	109	66	43	..
Westport	3,176	1,265	..	1,911	359	309	50	..
Charleston	380	220	..	160	67	76	..	9
Ahaura	2,130	1,840	..	290	601	501	100	..
Reefton	3,439	1,972	..	1,467	292	976	..	684
Wangapeka	24	56	32	..	4	6	..	2
Lyell	352	385	33	..	131	40	91	..
Murchison and Owen's ..	195	..	..	195	..	46	..	46
MARLBOROUGH.								
Havelock .. / Picton ..	457	467	10	..	104	94	10	..
WESTLAND.								
Hokitika .. / Kanieri ..	850	681	..	169	278	58	220	..
Greymouth	2,678	3,040	362	..	1,146	..	1,146	..
Ross	367	239	..	128	238	34	204	..
Stafford and Goldsborough	308	257	..	51	216	91	125	..
Okarito	74	158	84	..	160	13	147	..
Kumara	583	728	145	..	187	95	92	..
CANTERBURY.								
Ashburton	14	5	..	9	..	1	..	1
OTAGO.								
Hindon	716	389	..	327	53	116	..	63
Naseby	1,530	1,360	..	170	263	237	26	..
Alexandra .. / Black's .. / Clyde .. / Roxburgh ..	3,045	3,070	25	..	980	732	248	..
Cromwell	1,380	1,535	155	..	467	224	243	..
Arrowtown	361	575	214	..	120	77	43	..
Queenstown	1,119	863	..	256	456	95	361	..
Pembroke	22	22	..	..	4	3	1	..
Lawrence	1,626	1,485	..	141	367	460	..	93
Waikaia	617	615	..	2	157	124	33	..
Tapanui	12	22	10	..	7	10	..	3
Orepuki, Preservation, and Longwood	1,074	1,052	..	22	264	349	..	85
Maerewhenua	35	69	34	..	18	4	14	..
Wyndham	28	122	94	..	24	9	15	..
Nenthorn	2	..	..	2	..	..	..	..
Middlemarch	2	24	22	..	26	3	23	..
Gore	..	75	75	..	84	..	84	..
Totals	44,061	32,901	1,295	12,455	9,353	7,603	3,492	1,742
Net decrease ..	..	..	..	11,160	..	..	..	..
Net increase ..	..	..	..	..	..	..	1,750	..

No. 5.

RETURN of GOLD DUTY credited to LOCAL BODIES for the Year ended 31st December, 1899, and Quarter ended 31st March, 1900.

Local Body.	For the Year ended 31st December, 1899.	For the Quarter ended 31st March, 1900.
COUNTIES—	£ s. d.	£ s. d.
Coromandel	1,239 14 4	380 4 10
Ohinemuri	13,836 16 7	2,918 11 1
Piako	25 8 9	6 6 3
Thames	890 14 9	402 14 10
BOROUGH—		
Thames	472 8 1	257 9 9
Totals	16,465 2 6	3,965 6 9

The Treasury, Wellington, 19th May, 1900.

ROBERT J. COLLINS,
Accountant to the Treasury.

No. 6.

RETURN of the QUANTITY and VALUE of GOLD ENTERED for DUTY* for EXPORTATION from NEW ZEALAND from 1st APRIL, 1857, to 31st DECEMBER, 1899.

PRODUCE OF THE GOLDFIELDS IN		DURING THE QUARTER ENDED 31ST DEC., 1899.		ENTERED FOR EXPORTATION TO THE 30TH SEPT., 1899.		TOTAL ENTERED FOR EXPORTATION FROM NEW ZEALAND TO THE 31ST DEC., 1899.	
County or Borough.	District.	Qu'ntity	Value.	Quantity.	Value.	Quantity.	Value.
		Oz.	£	Oz.	£	Oz.	£
County of Coromandel ..	Auckland	4,859	20,466				
" Thames ..		4,630	19,026				
" Ohinemuri ..		37,462	135,820				
" Piako ..		159	677				
Borough of Thames ..		1,525	6,391				
		48,635	182,380	2,400,487	9,029,537	2,449,122	9,211,917
	Wellington ..	..	..	188	706	188	706
County of Marlborough	Marlborough ..	..	..	86,385	336,415	86,385	336,415
County of Collingwood ..	Nelson ..	419	1,571	1,674,859	6,640,045	1,675,278	6,641,616
County of Buller ..	West Coast	3,323	13,290				
" Inangahua ..		8,530	34,120				
" Grey ..		5,786	23,142				
" Westland ..		5,170	20,678				
Borough of Hokitika ..		149	600				
" Ross ..		604	2,416				
		23,562	94,246	4,446,107	17,684,297	4,469,669	17,778,543
County of Ashburton ..	Canterbury ..	5	20	47	187	52	207
County of Taieri ..	Otago	440	1,765				
" Tuapeka ..		7,712	31,134				
" Vincent ..		13,002	52,595				
" Maniototo ..		2,213	9,056				
" Waitaki ..		708	3,016				
" Lake ..		1,220	4,957				
" Wallace ..		1,991	8,033				
" Waikouaiti ..		292	1,157				
" Waihemo ..		629	2,530				
" Bruce ..		957	3,807				
" Fiord ..		85	345				
" Southland ..		1,162	4,678				
		30,411	123,073	5,523,973	21,873,197	5,554,384	21,996,270
	Unknown ..	..	..	207	824	207	824
Totals		103,032	401,290	14,132,253	55,565,208	14,235,285	55,966,498

No. 7.

COMPARATIVE RETURN of the QUANTITY and VALUE of GOLD ENTERED for DUTY* for EXPORTATION from NEW ZEALAND for the YEARS ended 31st DECEMBER, 1899 and 1898.

PRODUCE OF THE GOLDFIELDS IN THE DISTRICT OF	DURING THE QUARTER ENDED—				TOTALS FOR YEAR 1899.		TOTALS FOR YEAR 1898.	
	31st March, 1899.	30th June, 1899.	30th September, 1899.	31st December, 1899.	Quantity.	Value.	Quantity.	Value.
	Oz.	Oz.	Oz.	Oz.	Oz.	£	Oz.	£
Auckland ..	35,205	42,429	42,500	48,635	168,769	624,737	142,383	527,786
Marlborough ..	..	..	..	..	..	..	781	3,003
Nelson ..	..	..	..	419	419	1,571	1,720	6,882
West Coast ..	19,959	25,552	20,958	23,562	90,031	360,149	79,948	319,789
Canterbury ..	12	6	5	5	28	111	..	..
Otago ..	37,642	32,241	29,932	30,411	130,226	526,265	55,343	223,231
Unknown ..	..	85	..	..	85	340	..	..
Totals for 1899	92,818	100,313	93,395	103,032	389,558	1,513,173	..	..
Totals for 1898	69,468	66,563	66,642	77,502	..	..	280,175	1,080,691

* Gold duty abolished in the South Island on the 31st March, 1891, by "The Gold Duty Abolition Act, 1890."

Department of Trade and Customs,
Wellington, 12th January, 1900.

W. T. GLASGOW,
Secretary and Inspector.

No. 8.

RETURN of the QUANTITY and VALUE of GOLD ENTERED for DUTY* for EXPORTATION from NEW ZEALAND from 1st APRIL, 1857, to 31st MARCH, 1900.

PRODUCE OF THE GOLDFIELDS IN		DURING THE QUARTER ENDED 31ST MARCH, 1900.		ENTERED FOR EXPORTATION TO THE 31ST DECEMBER, 1899.		TOTAL ENTERED FOR EXPORTATION FROM NEW ZEALAND TO THE 31ST MARCH, 1900.	
County or Borough.	District.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
		Oz.	£	Oz.	£	Oz.	£
County of Coromandel	Auckland	3,803	15,938				
" Thames		2,931	11,608				
" Ohinemuri		27,160	96,713				
" Piako		63	261				
Borough of Thames		1,315	5,499				
		35,272	129,019	2,449,122	9,211,917	2,484,394	9,340,986
	Wellington	..	..	188	706	188	706
County of Marlborough	Marlborough	344	1,382	86,385	336,415	86,729	337,797
County of Collingwood	Nelson	2,081	8,324				
" Waimea		89	356				
		2,170	8,680	1,675,278	6,641,616	1,677,448	6,650,296
County of Buller	West Coast	3,501	14,006				
" Inangahua		7,788	31,105				
" Grey		6,279	25,069				
" Westland		5,243	20,820				
Borough of Hokitika		283	1,132				
" Ross		915	3,659				
		24,009	95,791	4,469,669	17,778,543	4,493,678	17,874,334
County of Ashburton	Canterbury	6	25	52	207	58	232
County of Taieri	Otago	361	1,395				
" Tuapeka		9,144	37,055				
" Vincent		11,436	46,504				
" Maniototo		3,732	15,253				
" Waitaki		511	2,089				
" Lake		2,137	8,665				
" Wallace		2,870	11,564				
" Waikouati		15	60				
" Waihemo		992	4,009				
" Bruce		764	3,016				
" Fiord		74	298				
" Southland		2,086	8,415				
		34,122	138,323	5,554,384	21,996,270	5,588,506	22,134,593
Unknown	..	..	..	207	824	207	824
Totals	..	95,323	373,220	14,235,285	55,966,498	14,331,208	56,339,718

No. 9.

COMPARATIVE RETURN of the QUANTITY and VALUE of GOLD ENTERED for DUTY* for EXPORTATION from NEW ZEALAND for the QUARTERS ended 31st MARCH, 1900.

District of	Quarter ended 31st March, 1900.		Quarter ended 31st March, 1899.	
	Quantity.	Value.	Quantity.	Value.
	Oz.	£	Oz.	£
Auckland	35,272	129,019	35,205	128,549
Marlborough	344	1,382	..	..
Nelson	2,170	8,680	..	..
West Coast	24,000	95,791	19,959	79,864
Canterbury	6	25	12	49
Otago	34,122	138,323	37,642	151,587
Totals	95,923	373,220	92,818	360,049

* Gold duty abolished in the South Island on 31st March, 1891, by "The Gold Duty Abolition Act, 1890."

Department of Trade and Customs,
Wellington, 30th April, 1900.

W. T. GLASGOW,
Secretary and Inspector.

No. 10.

STATEMENT showing the PRICE of GOLD per OUNCE, PRICE charged per TON for CRUSHING QUARTZ or CEMENT, and PRICES charged for WATER per SLUICE-HEAD per WEEK, during the Year ending 31st March, 1900.

Mining District.		Price of Gold per Ounce.	Price charged per Ton for crushing Quartz or Cement.	Price charged for Water per Sluice-head per Week.	Remarks.
		£ s. d.	£ s. d.	£ s. d.	
AUCKLAND—	North Hauraki	£2 16s. to £3 2s. 6d.	..	..	No public batteries; no water sold.
	South Hauraki	£2 13s.	..	..	..
	Ohinemuri	£4	0 6 0	..	Ditto.
	Te Aroha	£3 12s.	0 7 6	..	..
	Puhipuhi	..	..	..	None sold on field.
	Tauranga	..	..	..	No mines crushing.
MARLBOROUGH—Pelorus and Wairau ..		3 17 0	..	..	No cement or quartz worked in district.
NELSON—	Wangapeka	£3 12s. to £3 16s.	..	..	..
	Motueka	3 13 0	..	..	..
	Charleston	3 19 0	0 1 6	2 5 0	40 in.
	Inangahua	£3 18s. to £4 4s.	..	..	..
	Collingwood	3 14 0	..	..	..
	Takaka	3 14 6	..	..	..
	Westport	3 18 9	..	..	..
	Murchison ..	3 17 0	0 10 0	..	..
	Lyell				..
WESTLAND—	Hokitika, Kanieri, and Waimea ..	3 18 0	..	3 0 0	40 in.
	Totara and Ross	3 18 0	0 12 0	1 10 0	40 in. head.
	Stafford	3 18 0	..	1 10 0	..
	Greymouth	3 18 0	0 12 0	0 10 0	..
	Kumara	3 18 0	..	1 10 0	20 in. by 2 in. opening.
	Ahaura	3 18 0	0 12 6	1 10 0	Sluice, 20in. by 2in.
	Okarito	..	..	..	..
OTAGO—	Hindon	3 17 6	..	..	..
	Tuapeka	3 18 6	..	3 0 0	..
	Longwood	3 10 6	..	..	..
	Preservation and Waiau ..	3 16 6	..	..	..
	Orepuki and Roundhill ..	3 18 6	..	..	..
	Arrow (Wakatipu Goldfield) and Queenstown	3 15 0	12s. 6d. to 15s.	..	..
	Mount Ida ..	3 17 0	..	..	£1 10s., Government race, 40 in. by 1 in.
	Macrae's, Hyde ..				
	Hamilton, Serpentine				
	Maerewhenua	3 17 0	..	1 0 0	20 in. by 2 in., 4 in pressure.
	Cromwell	3 17 0	0 8 0	0 4 0	..
	Waikaia	3 17 0	..	1 15 0	..
	Tapanui	3 15 0	..	..	..
	Wyndham	£3 16s. to £3 18s.	..	..	..
	Roxburgh ..	3 17 6	..	..	Water used by owners.
	Clyde and Alexandra				
	Black's				

No. 11.

RETURN showing the AVERAGE PRICES of PROVISIONS and LIVE-STOCK for the Year ending 31st March, 1900.

Mining District.	Beer.	Brandy.	Bread—Wheaten.	Butter—Fresh.	Butter—Salt.	Cheese.	Coffee.	Flour.	Grain—Wheat.	Live-stock.					Meat.			Milk.	Rice.	Salt.	Sugar.	Tea.	Tobacco.	Wine.
										Cattle—Horned.	Goats.	Horses.	Sheep.	Swine.	Beef.	Mutton.	Pork.							
	Per. hhd.	Per gall.	Per lb.	Per lb.	Per lb.	Per lb.	Per lb.	Per 100 lb.	Per Im. bushel.	Per head.	Per head.	Per head.	Per head.	Per head.	Per lb.	Per lb.	Per lb.	Per qt.	Per lb.	Per lb.	Per lb.	Per lb.	Per lb.	Per gallon.
AUCKLAND—			d.							£		£			d.	d.	d.	d.	d.	d.	d.			
South Hauraki	90/	27/	1½	/9	/6	/6	1/10	10/6	4/	6	12/	9	15/	40/	5	4	6	3	3½	1	3	2/6	6/	15/–20/
Ohinemuri	96/	23/	1½	1/2	/10	/7	1/10	10/6	4/6	6	..	7	10/	20/	5	4	6	3	3½	1	3	1/10	8/	16/6
North Hauraki	90/	27/	1½	/10–1/	/6½	/6	1/10	10/6	4/3	6	12/	3–50	10/	16/	5	4½	6	4	3	1	3	1/6–2/3	6/6	16/6–20/
Tauranga	84/	27/	1½	1/	/8	/7	1/8	9/	2/6	4	..	6	13/	8/	4	4	6	3	3	1	3	2/	6/	25/
Te Aroha	144/	30/	1½	/10	/8	/6	2/	15/	3/6	6	20/	16	10/	20/	3	3	4	3	3	1½	3	2/	6/	9/
Puhipuhi	91/	48/	3	/10	/7	/6	2/	10/	3/	70/–100/	..	2–50	8/–9/	3d. per lb. live weight	4–6	3–5	6	3	3	1	2½	2/	6/	24/
MARLBOROUGH—																								
Queen Charlotte Sound Pelorus .. Wairau ..	80/	23/	3½	1/	/10	/7	2/	12/	5/	6	18/	12	8/	30/	6	4	7	4	3	1½	3½	2/	6/	22/
NELSON—																								
Wangapeka	..	..	6	/6–/8	/7	/8	2/	9/–12/	..	4–5	..	12–25	10/–12/	20/–40/	3–4	2½–3	4	4	3	1½	3	2/6–3/	6/–7/	..
Collingwood	93/	25/	2	/8	/6	/8	1/10	8/	3/6	4	..	10–25	7/	15/	4	3	5	4	3½	1	3	2/4	6/	16/
Takaka	80/	26/	2	/7	/6	/7	1/9	8/	3/6	3–4	..	7–40	8/–12/	25/ cwt.	3	2½	4	3	3	1	3	1/–1/9	6/	6/
Inangahua	90/	26/	1¾	1/	/10	/7	1/9	10/	4/6	5	9/	10–25	9/	25/	4	4	4	4	3	1	3	2/	6/	17/
Lyell .. Murchison ..	105/	26/	2¼	1/1	/8	/8	2/	13/6	7/	6/5/0	..	..	11/	35/	5	5	6	6	4	1½	3½	2/	6/	20/
Westport	90/	27/	1½	1/2	1/	/6	2/	12/	6/	7	15/	20	16/	40/	6	5	6	5	3	1	3½	2/3	7/6	26/
Charleston	120/	26/	6	1/	/11	/7	2/	9/	4/	6	..	17/10/0	16/	30/	4½	4½	5	5	4	1	3	2/	5/9	16/
Ahaura	96/	25/	1½	1/3	1/	/9	1/6	15/	5/	5–7	20/–30/	7–25	10/–14/	30/–80/	4	4½	6	6	4	2	3½	2/	6/6	18/
WESTLAND—																								
Stafford .. Waimea ..	100/	30/	1½	1/	1/	/8	1/9	10/	5/	6	5/	17	12/	40/	4	4	6	4	3	1½	3	2/	6/	24/
Hokitika and Kanieri ..	80/	25/	1¾	1/	/10	/6	1/3	15/	4/	7–10	..	6–20	10/	60/–90/	5	5	6	4	2½	1	2¾	2/	5/6	16/
Ross	110/	24/6	1½	1/	1/	/8	1/6/2/	14/	6/	6–7	5/	10–20	12/–16/	40/–60/	7	6	8	4	4	2	3	2/–2/6	6/	20/–30/
Okarito	90/	39/	3	1/3	1/6	/9	2/3	18/	5/3	5–7	..	9–30	17/	..	6	5	8	..	4	2	3½	2/–3/	7/	19/–25/
Kumara	85/	23/6	2	1/3	1/	/8	1/6	15/	5/	5–10	10/	8–30	12/	40/–100/	5	5	7	6	3	2	4	2/–3/	6/–8/	22/
Greymouth	90/	25/	1½	1/	/10	/6	1/9	8/6	3/	7	..	10–40	11/6	25/–65/	4–6	3–5	6	4	3	1¼	2½	2/	5/	16/6
OTAGO—																								
Hindon	..	..	1¼–1½	1/	/10	/7	1/9	10/	..	3–6	..	5–30	2/–12/	..	3	3	3	4	3½	1	3½	2/	6/	..
Tuapeka	90/	26/	1½	/10	/10	/6	1/10	8/	2/	5	..	10–30	14/	20/–40/	5	3	6	3	3	1	3½	2/	5/	18/
Tapanui	90/	24/	1¼	1/	/9	/6	2/	9/	3/	7	..	10–30	14/	10/–60/	6	4	6	3	4	1	3½	2/	6/	18/
Cromwell	100/	27/	2½	1/3	1/	/8	1/9	9/6	2/6	3/10/0	..	12	20/	50/	4½	5	6½	6	4	2	4½	2/3	5/6	18/
Clyde .. Alexandra .. Roxburgh .. Black's ..	120/	28/	1¾	1/	1/	/9	1/9	12/	5/	50/–120/	..	7–40	5/–20/	40/	5	4	7	5	2	1½	3	2/	5/–7/	22/
Queenstown	110/	28/	2	1/3	1/	/9	2/	11/	2/3	5–10	..	10–30	3/–15/	20/–80/	6	5	6	6	3	2	3–4	2/–3/	6/	16/–30/
Wyndham	100/	28/	1½	1/	/8	/6	1/9	8/6	2/6	5	10/	10–45	12/	50/	4–6	2½–3	5	4	3	1	3	1/8–2/6	5/	22/6
Arrow (Wakatipu Goldfield)	120/	30/	2	1/	1/	/9	2/	11/	2/3	5–10	..	10–30	3/–15/	20/–80/	6	5	6	6	3	2	3–4	2/–3/	6/	16/–30/
Mount Ida .. Nenthorn ..	100/–130/	30/–40/	1½–1¾	1/–1/3	/10-1/3	/6–/8	1/6-2/6	8/–10/	3/–3/6	6–6/10/0	10/	10–40	10/–14/	59/–60/	5–6	4–6	6	4	3	1½	2½–4	1/3–2/	5/–6/	21/–24/
Waikaia	90/	28/	1½	1/	/10	/7½	2/	12/	2/6	6	..	10–35	10/–16/	40/	6	4	6	4	4	2	4	3/	6/	20/
Orepuki and Longwood ..	90/	33/	2	/10	/10	/6	2/	9/	3/	6–9	20/	6–18	5/–12/	20/–40/	4	3	6	3	2½	1	3	1/6–2/6	5/6	27/
Maerewhenua	..	..	1¾	/9	/9	/8	2/	14/	3/9	3/10/0	..	15	6/–8/	30/	4	3	3½	3	3	1½	3	2/	6/	..
Gore	100/	28/	1¼	/8	/6	/6	1/10	8/	2/	6	..	25	12/	40/	3	3	3¾	3½	2	1	3½	2/4	5/6	18/

No. 12.

TABLE showing the AVERAGE RATE of WAGES per WEEK for the Year ending 31st March, 1900.

Mining District.	General Managers.	Legal Managers.	Mining Managers.	Engineers.	Engine-drivers.	Stokers.	Blacksmiths.	Carpenters.	Miners.	Labourers.	Boys.	Chinese.	Agricultural Labourers.	Domestic Servants.
AUCKLAND—	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	
North Hauraki ..	£5 to £10	£1 to £2	£3 to £5	£3 to £3 10	2 14 0	2 8 0	2 8 0	2 14 0	2 8 0	2 2 0	5/ to 30/	..	1 16 0	5/ to 15/
South Hauraki ..	£5 to £10	£1 to £2	£3 to £7	£3 to £3 10	2 14 0	2 8 0	2 8 0	2 14 0	2 8 0	2 2 0	5/ to 30/	..	1 10 0	5/ to 15/
Puhipuhi	4 10 0	£50 p.a.	£3 to £3 12	£2 8 to £3	2 8 0	2 2 0	3 0 0	2 14 0	2 8 0	1 16 0	..	..	1 10 0	10/ to 12/
Ohinemuri	£150 to £1200 p.a.	£1 to £2	£4 to £8	£4 to £5	£2 8 to £2 14	2 8 0	£2 14 to £3	3 0 0	£2 8 to £2 14	2 2 0	1 10 0	..	1 0 0	5/ to 12/6
Te Aroha	8 0 0	4 0 0	8 0 0	4 0 0	3 0 0	2 0 0	3 0 0	3 0 0	2 10 0	2 0 0	1 5 0	..	1 10 0	10/
Tauranga	..	10 per cent.	2 10 0	..	..	2 8 0	2 8 0	2 8 0	2 10 0	1 16 0	10/ to 15/	..	1 0 0	7/ to 10/
MARLBOROUGH	..	0 0	3 10 0	2 14 0	2 8 0	..	2 14 0	2 14 0	2 8 0	2 2 0	..	..	1 16 0 and found	10/
NELSON—														
Collingwood	5 0 0	2 0 0	5 0 0	3 10 0	2 10 0	2 8 0	2 14 0	2 14 0	2 8 0	2 2 0	0 15 0	..	1 10 0	15/
Takaka	..	..	..	..	2 10 0	..	2 10 0	2 8 0	2 2 0	1 16 0	10/ to 12/	..	£1 and found	7/
Inangahua	..	£1 to £2	£4 to £10	4 0 0	4 0 0	3 0 0	£3 10 to £4	£3 10 to £4	£2 17 to £3	2 11 0	1 10 0	..	£1 to £1 5	5/ to 15/
Charleston	..	..	4 10 0	..	..	..	3 10 0	3 10 0	£2 10 to £3	2 8 0	1 5 0	..	£1 and found	10/
Westport	..	0 10 0	4 0 0	..	3 0 0	2 8 0	3 0 0	3 12 0	2 14 0	2 8 0	1 0 0	..	..	10/
Lyell	..	4 0 0	5 0 0	3 15 0	3 10 0	2 15 0	3 10 0	3 5 0	3 0 0	2 10 0	2 0 0	0 15 0	..	10/
Ahaura	£6 to £8	2 0 0	4 0 0	£3 10 to £5	3 0 0	2 10 0	3 10 0	3 12 0	2 10 0	1 10 0	0 15 0	..	1 10 0	7/ to 15/
Murchison	..	..	..	3 15 0	..	2 15 0	3 5 0	3 0 0	2 10 0	2 0 0	..	0 15 0	..	10/
Wangapeka	..	..	..	..	..	..	3 0 0	3 0 0	£2 8 to £3	£1 16 to £2 2	1 10 0	..	1 16 0	6/ to 9/
WESTLAND—														
Waimea and Stafford ..	6 0 0	..	5 0 0	3 10 0	..	..	3 0 0	3 10 0	2 10 0	2 0 0	0 10 0	2 0 0	..	12/
Hokitika and Kanieri ..	4 0 0	1 0 0	£4 to £5	4 0 0	3 0 0	..	..	3 12 0	3 0 0	2 10 0	1 0 0	£1 10 to £2	1 0 0	8/ to 15/
Ross	..	1 5 0	5 0 0	..	..	..	4 0 0	3 12 0	3 0 0	2 10 0	1 10 0	..	..	10/
Kumara	6 0 0	2 0 0	4 0 0	..	3 0 0	..	3 10 0	3 10 0	2 10 0	10/ p. day £2 10	1 0 0	..	..	7/ to 12/
Greymouth	..	£1 to £2	£4 to £6	3 0 0	3 0 0	2 10 0	£3 to £3 10	£3 to £4 4	£2 10 to £3	£2 2 to £2 14	8/ to 15/	£1 10 to £2	20/–40/ found	5/ to 12/6
Okarito	..	..	..	..	..	..	..	3 10 0	3 0 0	2 10 0	..	..	1 10 0	10/
OTAGO—														
Hindon	..	..	4 0 0	..	..	..	..	2 14 0	2 8 0	2 2 0	..	..	1 0 0	..
Tuapeka	4 0 0	2 0 0	3 10 0	£4 to £5	2 10 0	2 2 0	2 14 0	3 0 0	2 2 0	2 0 0	0 10 0	1 0 0	1 0 0	10/ to 12/
Tapanui	..	..	..	..	..	..	3 0 0	3 0 0	2 8 0	2 2 0	10/ to 15/	15/ to £1	£1 and found	8/ to 10/
Cromwell	5 0 0	..	4 10 0	4 0 0	3 0 0	2 10 0	3 0 0	3 0 0	3 0 0	2 8 0	1 5 0	1 0 0	25/ and found	8/ to 12/
Clyde ..														
Alexandra ..	4 10 0	10/ to 21/	4 0 0	4 0 0	£2 8 to £3	..	4 0 0	3 12 0	£2 8 to £3	2 8 0	0 15 0	1 5 0	£1 and found	7/6 to 15/
Black's ..														
Roxburgh ..														
Waikaia	2 10 0	1 10 0	5 0 0	..	3 0 0	..	3 0 0	3 0 0	2 2 0	2 0 0	0 10 0	1 5 0	1 0 0	10/ to 14/
Orepuki, Longwood, and Preservation	5 0 0	£40 per ann.	£2 10 to £4 10	3 0 0	2 10 0	2 5 0	2 10 0	3 0 0	2 2 0	1 16 0	0 15 0	1 10 0	2 5 0	10/ to 15/
Arrow	5 0 0	1 0 0	5 0 0	4 0 0	3 0 0	2 10 0	3 0 0	4 0 0	3 0 0	2 8 0	10/ to £1	£1 to £1 10	£1 to £1 5	8/ to 12/
Queenstown	6 0 0	1 0 0	5 0 0	4 0 0	3 0 0	2 10 0	3 0 0	4 10 0	3 0 0	2 8 0	10/ to 15/	£1 to £1 5	£1 to £1 5	7/6 to 12/6
Mount Ida	..	£25 per ann.	£3 to £5	4 0 0	2 14 0	2 14 0	£2 14 to £3	£2 14 to £3	£2 8 to £2 11	£2 2 to £2 8	12/ to 15/	£1 to £1 5 and	£1 and found	10/
Wyndham	7 10 0	2 0 0	..	3 0 0	..	..	2 10 0	2 10 0	..	1 5 0	0 10 0	.. [found	1 5 0	6/ to 15/
Gore	4 0 0	..	4 0 0	2 8 0	2 8 0	2 8 0	2 8 0	2 8 0	2 8 0	2 8 0	..	..	2 12 6	8/ to 10/

No. 13.

NUMBER of MACHINES employed in ALLUVIAL and QUARTZ-MINING, and the VALUE thereof, for the Year ending 31st March, 1900.

Mining District.	Machinery employed in Alluvial Mining.														Machinery employed in Quartz-mining.								Approximate Value of all Mining Plant included in this Return.
	Steam-engines employed winding, crushing, &c.		Puddling-machines.	Whims.	Whips or Pulleys.	Sluices, Toms, and Sluice-boxes.	Water-wheels.	Hydraulic Hose.	Pumps.	Dredges.	Quicksilver and Compound Cradles.	Derricks.	Stamp-heads crushing Cement.	Boring-machines.	Steam-engines employed winding, crushing, &c.		Crushing-machines.	Stamp-heads.	Water-wheels.	Whims.	Whips or Pulleys.	Derricks.	Berdans.	
	No.	Aggregate h.p.													No.	Aggregate h.p.								
																								£
AUCKLAND—																								
Ohinemuri ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	55	2,640	4	534	17	1	1	..	..	260,205
North Hauraki ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	42	1,710	12	178	2	..	..	..	59	55,000
South Hauraki ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	31	1,142	29	1,235	52	1	1	..	186	215,335
Te Aroha	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	10	..	..	..	..	..	..
Puhipuhi ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	25
Totals ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	130	5,492	47	1,957	72	2	2	..	245	530,565
MARLBOROUGH—																								
Wakamarina ..																								
Cullen's Creek ..	..	..	..	..	..	48	4	..	8	2	..	..	..	..	1	15	1	10	1	..	..	..	..	6,000
Waikakaho ..																								
Other places ..																								
Totals ..	..	..	..	..	..	48	4	..	8	2	..	..	..	..	1	15	1	10	1	..	..	..	..	6,000
NELSON—																								
Wangapeka ..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Collingwood ..	..	..	..	..	..	45	..	7	..	..	..	..	..	..	1	2	2	23	..	..	..	..	..	57,050
Takaka	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Inangahua ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	27	758	22	440	22	2	3	..	65	200,362
Charleston ..	..	..	..	..	..	95	6	71	..	..	..	..	28	..	..	..	..	..	..	..	..	..	..	800
Lyell	..	..	..	..	..	75	..	5	..	1	..	..	..	..	..	..	3	35	3	..	..	..	..	17,500
Murchison ..	..	..	..	..	..	650	1	3	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	16,000
Westport	..	..	..	..	..	51	3	24	..	..	..	..	22	..	..	..	4	35	4	..	..	..	..	10,000
Ahaura	..	..	..	..	..	100	..	100	1	..	2	1	4	8	1	18	4	22	..	..	1	..	..	22,000
Totals ..	..	..	..	..	..	1,016	10	214	2	3	2	1	54	8	29	778	35	555	29	2	4	..	65	323,712
WESTLAND—																								
Stafford	..	..	..	3	6	8,100	6	400	4	..	7	..	..	1	..	..	..	..	..	..	..	..	..	40,000
Ross	1	12	..	..	1	60	1	20	..	2	..	..	..	..	..	..	1	6	1	..	..	..	..	20,000
Hokitika and Kanieri	..	..	..	..	2	100	1	120	1	1	..	..	5	..	..	..	..	..	..	..	..	..	..	3,000
Greymouth ..	..	..	..	..	..	1,506	2	526	28	..	75	..	..	..	..	..	2	6	2	..	..	..	..	13,760
Kumara	..	..	..	..	..	150	2	90	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2,800
Okarito	..	..	..	..	..	23	..	..	..	..	10	..	..	..	..	..	..	..	..	..	..	..	..	120
Totals ..	1	12	..	3	9	9,939	12	1,156	33	3	92	..	5	1	..	..	3	12	3	..	..	..	..	79,680
OTAGO—																								
Tapanui	..	..	..	..	..	3	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	430
Hindon	..	..	..	..	..	15	2	2	..	..	..	..	..	..	5	38	4	31	2	..	..	..	..	8,000
Tuapeka	..	..	..	..	..	560	..	25	..	20	..	..	..	..	2	16	3	35	2	..	..	..	..	70,000
Cromwell	4	49	..	..	..	..	..	5	..	12	1	..	..	..	2	23	7	34	1	..	..	..	..	52,000
Clyde and Alexandra																								
Roxburgh ..	2	12	..	..	2	1,600	3	25	4	33	..	1	..	2	..	..	2	15	1	..	1	..	..	245,000
Black's								miles																
Orepuki, Waiau, and Preservation	8	110	..	..	..	275	..	..	..	..	..	..	..	..	4	32	4	20	2	..	..	..	..	12,300
Waikaia (Switzer's)	..	..	..	..	..	500	..	10	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	16,000
Arrow	..	..	..	..	..	250	..	50	5	1	..	..	..	..	..	..	4	40	3	..	..	..	..	25,000
Queenstown ..	..	..	..	..	..	400	..	50	2	2	..	..	..	..	..	..	5	75	..	..	..	..	..	45,000
Naseby																								
Kyeburn and Clarke's																								
Hamilton's and Sowburn																								
Hyde and Fullerton's		..	..	13	..	106	3	35	2	8	..	..	..	..	2	22	7	45	6	1	1	..	..	44,000
Macrae's, Strath-Taieri, and Shag Valley																								
Serpentine ..																								
St. Bathan's, Ida Valley, &c.																								
Gore	..	..	..	..	..	..	..	..	..	9	..	..	..	..	..	..	..	..	..	..	..	..	..	18,000
Wyndham ..	1	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	250
Totals ..	15	183	..	13	2	3,709	8	202	13	87	1	1	..	2	15	131	36	295	17	1	2	..	..	535,980

SUMMARY.

Auckland	..	..	..	..	..	..	..	..	..	..	..	..	..	..	130	5,492	47	1,957	72	2	2	..	245	530,565
Marlborough ..	..	..	..	..	..	48	4	..	8	2	..	..	..	..	1	15	1	10	1	..	..	..	..	6,000
Nelson	..	..	..	..	..	1,016	10	214	2	3	2	1	54	8	29	778	35	555	29	2	4	..	65	323,712
Westland	1	12	..	3	9	9,939	12	1,156	33	3	92	..	5	1	..	..	3	12	3	..	..	..	..	79,680
Otago	15	183	..	13	2	3,709	8	202	13	87	1	1	..	2	15	131	36	295	17	1	2	..	..	535,980
Totals ..	16	195	..	16	11	14,712	34	1,572	56	95	95	2	59	11	175	6,416	122	2,829	122	5	8	..	310	1,475,937

No. 14.

TABLE showing approximately the NUMBER, DESCRIPTION, and VALUE of the WATER-RACES, TAIL-RACES, DAMS, RESERVOIRS, and GROUND-SLUICES in Operation during the Year ending 31st March, 1900.

Mining District.	Water-races.				Tail-races.		Dams.		Reservoirs.		Ground-sluices.		Approximate Total Cost.
	No.	Length in Miles.	No. of Sluice-heads.	Approximate Cost.	No.	Approximate Cost.	No.	Approximate Cost.	No.	Approximate Cost.	No.	Approximate Cost.	
AUCKLAND—				£		£		£		£		£	£
Hauraki North ..	8	7¼	22	8,450	2	50	3	510	2	25	..	1,835	10,870
Hauraki South ..	18	24	153	57,586	6	340	71	770	2	5,000	..	..	63,696
Te Aroha ..	1	1	10	1,000	..	..	..	..	..	..	..	..	1,000
Puhipuhi ..	2	4	20	400	..	..	..	..	..	..	..	..	400
Ohinemuri ..	14	8¾	99	14,550	1	1,000	7	3,000	..	..	..	..	18,550
Totals ..	43	45	304	81,986	9	1,390	81	4,280	4	5,025	..	1,835	94,516
MARLBOROUGH—													
North Bank of Wairau	11	14½	37	1,035	3	115	..	..	2	30	..	..	1,180
Pelorus	39	49½	86	4,495	9	580	4	145	2	75	..	..	5,295
Totals ..	50	64	123	5,530	12	695	4	145	4	105	..	..	6,475
NELSON—													
Wangapeka, Baton, and Sherry	4	9½	110	10,250	12	..	11	..	..	..	..	..	10,250
Collingwood ..	88	94	756	117,981	62	7,525	68	10,649	..	..	..	..	136,155
Inangahua ..	473	377	3,514	155,579	539	32,205	608	22,968	..	..	..	..	210,752
Charleston ..	100	120½	464	47,514	132	10,507	327	8,977	..	..	..	..	66,998
Westport ..	214	157	1,284	35,263	188	27,287	391	16,410	..	..	..	..	78,960
Lyell	61	68	147	7,850	14	600	17	1,550	..	..	..	..	10,000
Murchison ..	139	115	538	22,181	51	1,700	43	2,050	..	..	..	..	25,931
Ahaura	762	702¼	2,897	137,786	811	72,064	723	20,271	..	..	..	..	230,121
Motueka ..	5	10	27	2,110	1	60	3	80	..	..	..	..	2,250
Takaka	6	2½	20	200	6	100	6	60	..	..	6	..	360
Totals ..	1,852	1,655¾	9,757	536,714	1,816	152,048	2,197	83,015	..	..	6	..	771,777
WESTLAND—													
Hokitika & Kanieri	320	265	650	221,000	300	3,500	310	3,000	..	..	..	..	227,500
Ross	140	110	500	55,000	160	1,500	75	2,000	..	..	60	700	59,200
Kumara ..	180	100	380	24,000	180	13,000	65	4,500	11	7,000	30	600	49,100
Greymouth ..	408	364	1,568	117,206	782	18,151	989	13,244	..	..	..	..	148,601
Okarito	58	38	348	13,350	19	900	15	570	..	..	..	..	14,820
Stafford	580	400	300	25,000	500	10,000	600	8,000	60	4,000	500	4,000	51,000
Totals ..	1,686	1,277	3,746	455,556	1,941	47,051	2,054	31,314	71	11,000	590	5,300	550,221
OTAGO—													
Hindon	73	115½	710	35,420	21	380	12	1,505	..	..	20	125	37,430
Tuapeka ..	325	910	1,835	17,700	435	9,500	313	7,200	..	..	..	..	34,400
Tapanui ..	5	8½	10	130	3	30	2	30	..	..	..	..	190
Clyde, Alexandra, Black's, and Roxburgh	615	1,569	2,604	100,000	385	21,000	165	20,000	1	3,500	..	..	144,500
Arrow	90	175	225	14,000	125	4,500	25	1,400	25	..	..	..	19,900
Cromwell ..	510	1,367	2,006	92,268	294	14,340	228	11,740	..	..	..	..	118,348
Waikaia ..	243	430	920	39,000	250	2,200	127	2,000	..	..	24	900	44,100
Orepuki, Longwood, and Preservation	90	140	450	18,000	36	2,880	33	495	..	..	..	..	21,375
Queenstown ..	120	200	600	50,000	150	5,000	40	1,700	30	..	..	..	56,700
Naseby .. .. Kyeburn & Clarke's Hamilton's and Sowburn Hyde & Fullerton's Macrae's, Strath-Taieri, and Shag Valley Serpentine .. St. Bathan's and Ida Valley	511	1,117¾	2,027¾	35,564	617	16,362	276	12,397	..	..	..	..	64,323
Wyndham ..	15	35¾	92	4,730	..	..	30	20	..	..	..	..	4,750
Gore	10	5	108	1,475	..	..	2	42	..	..	..	..	1,517
Totals ..	2,607	6,073½	11,587¾	408,287	2,316	76,192	1,253	58,529	56	3,500	44	1,025	547,533

SUMMARY.

Auckland	43	45	304	81,986	9	1,390	81	4,280	4	5,025	..	1,835	94,516
Marlborough ..	50	64	123	5,530	12	695	4	145	4	105	..	..	6,475
Nelson	1,852	1,655¾	9,757	536,714	1,816	152,048	2,197	83,015	..	..	6	..	771,777
Westland	1,686	1,277	3,746	455,556	1,941	47,051	2,054	31,314	71	11,000	590	5,300	550,221
Otago	2,607	6,073½	11,587¾	408,287	2,316	76,192	1,253	58,529	56	3,500	44	1,025	547,533
Totals	6,238	9,115¼	25,517¾	1,488,073	6,094	277,376	5,589	177,283	135	19,630	640	8,160	1,970,522

No. 15.

RETURN of CASES in the WARDENS' COURTS, and COSTS AWARDED, for the Year ending 31st March, 1900.

Mining District.	Number of Mining Disputes adjudicated on.	Aggregate Amount of Value.		Amount of Costs awarded.	Cases wherein Judgment has decreed Specific Performance.
		Claimed.	Recovered.		
AUCKLAND—		£ s. d.	£ s. d.	£ s. d.	
North Hauraki	95	324 5 1	320 17 6	86 3 3	..
South Hauraki	..	..	..	..	..
Te Aroha	5	6 15 0	5 5 0	6 15 0	..
Puhipuhi	..	..	..	..	..
Ohinemuri	70	1,716 10 0	150 13 0	28 3 0	..
MARLBOROUGH	17	96 6 3	22 10 0	6 12 0	..
NELSON—					
Collingwood	5	22 15 0	13 10 0	2 7 6	2
Inangahua	37	919 15 5	484 15 5	101 18 4	..
Lyell and Murchison	6	..	..	7 0 0	1
Westport	37	1 11 3	1 11 3	1 12 0	..
Charleston	6	495 0 0	5 0 0	24 16 0	..
Motueka	..	..	..	..	..
Takaka	..	..	..	..	..
WESTLAND—					
Kumara	6	27 7 6	..	6 18 6	..
Greymouth	25	2,894 10 0	152 16 0	38 7 0	15
Hokitika and Kanieri	2	56 0 0	6 0 0	3 3 0	..
Stafford	3	72 3 9	7 0 0	3 2 0	..
Ross	3	12 0 0	12 0 0	1 3 0	1
Ahaura	31	1,082 9 6	496 17 9	66 0 3	..
Goldsborough	..	..	..	..	..
OTAGO—					
Tapanui	..	..	..	..	..
Hindon	6	110 0 0	..	0 12 6	..
Tuapeka	30	1,065 5 0	26 4 0	53 11 6	..
Cromwell	70	1,032 9 6	115 0 0	23 5 0	..
Roxburgh					
Black's	18	307 10 0	307 10 0	21 9 0	1
Clyde and Alexandra ..					
Waikaia	16	240 0 0	..	50 0 0	..
Orepuki, Longwood, and Preservation	33	289 13 7	57 1 0	47 11 0	..
Arrow (Wakatipu Goldfield) ..	9	26 16 0	24 10 0	7 18 0	..
Queenstown	5	22 15 0	22 15 0	2 15 0	..
Mount Ida	29	359 19 6	3 14 6	40 2 0	..
Maerewhenua	..	..	..	..	..
Wyndham	1	..	..	..	..
Gore	7	267 11 0	..	2 2 0	..
Totals	572	11,449 8 4	2,235 10 5	633 6 10	20

No. 16.

RETURN of the NUMBER of MINING LEASES or LICENSES and AGRICULTURAL LEASES in Force on the 31st March, 1900, the EXTENT of GROUND LEASED or held under LICENSE, and RENTAL per ANNUM.

Mining District.	Mining Leases. No.	Mining Leases. Gross Acreage.	Mining Leases. Rental per Annum.	Agricultural Leases. No.	Agricultural Leases. Gross Acreage.	Agricultural Leases. Rental per Annum.
AUCKLAND—		A. R. P.	£ s. d.		A. R. P.	£ s. d.
Hauraki North	178	5,135 3 6	354 11 0	..	..	..
Hauraki South	174	9,798 0 19	1,488 17 6	..	..	..
Te Aroha	41	2,773 0 3	1,113 6 0	1	100 0 0	1 5 0
Puhipuhi	3	296 0 0	37 10 0	..	..	..
Ohinemuri	158	11,591 3 26	2,240 11 10	1	20 2 0	*
Tauranga	21	1,819 2 15	454 15 0	..	..	..
MARLBOROUGH—						
Wairau and Pelorus	3	812 2 32	40 12 9	..	..	..
NELSON—						
Collingwood	1	10 0 0	10 0 0	..	..	..
Inangahua	112	5,438 2 33	836 12 6	..	..	..
Charleston	19	298 2 39	74 15 0	..	..	..
Ahaura	106	5,031 2 26	586 12 6	..	..	..
Lyell	32	1,334 0 0	177 10 0	..	..	..
Murchison	21	462 0 0	157 18 6	..	..	..
WESTLAND—						
Hokitika and Kanieri	27	1,874 0 37	413 10 0	..	..	..
Kumara	40	1,201 3 15	254 0 0	3	59 0 3	6 0 0
Greymouth	171	10,895 0 16	986 4 0	..	..	..
Ross	15	710 0 0	329 10 0	..	..	..
OTAGO—						
Cromwell	24	1,143 3 15	588 15 0	2	223 3 19	17 4 0
Hindon	16	627 0 0	95 4 6	..	..	..
Black's	..	..	..	68	1,583 0 0	104 6 6
Clyde and Alexandra						
Roxburgh						
Naseby	121	3,617 0 3	666 14 6	..	..	..
Arrow (Wakatipu Goldfield)	62	2,298 0 0	288 2 6	3	150 0 17	7 9 6
Queenstown	79	2,846 0 0	275 13 0	13	216 3 1	6 13 9
Maerewhenua	1	30 0 12	15 10 0	33	1,164 0 0	45 12 8
Orepuki and Longwood	54	2,403 0 0	121 8 0	..	..	..
Wyndham	10	384 0 0	66 7 6	1	100 0 0	2 10 0
Totals	1,489	72,832 1 17	11,674 1 7	125	3,617 1 0	191 1 5

* No rent payable since 1884.

Statement of Affairs of Mining Companies, as published in accordance with the Mining Companies Acts, 1891 and 1894.

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 up per Share.	Arrears of Calls.	Number of Shares forfeited.	Number of Shareholders at present.	Number of Men employed.	Quantity and Value of Gold or Silver produced since Registration.		Total Expenditure since Registration.	Total Amount of Dividends paid.
											Quantity.	Value.		
AUCKLAND DISTRICT.														
		£	£	£		£ s. d.	£ s. d.				Oz.	£	£	£
Golden Belt Gold-mining Co. (No Liability) ..	6/10/99	10,050	1,503	4,125	80,400	0 0 9	..	15,700	89	7	..	..	1,839	..
Imperial Gold-mining Co. (No Liability) ..	22/2/95	10,000	5,917	417	100,000	0 1 2	..	21,773	250	5	43	85	6,693	..
Alpha Gold-mining Co. (No Liability)	30/3/95	11,250	5,839	3,313	75,000	0 2 6	623 2 6	450	165	8	863	792	9,978	..
New Whau Gold-mining Co. (No Liability) ..	30/3/95	18,750	4,799	1,354	125,000	0 1 1	405 11 5	43,067	134	7	41	109	5,366	..
Barrier Reefs Gold-mining Co. (Ltd.)	11/12/99	91,050	..	91,050	91,050	..	..	..	86	39	..	..	1,463	..
Hauraki No. 2 Gold-mining Co. (No Liability) ..	10/7/95	12,000	6,380	..	80,000	0 1 8	..	65,301	29	2	..	..	6,412	..
Waihi Beach United Gold-mining Co. (No Liability)	12/10/98	562	562	..	127,500	On 20,000, 6d.	..	..	117	6	..	..	1,600	..
Welcome Find Gold-mining Co. (Ltd.).. ..	18/4/95	17,500	10,576	1,000	70,000	0 3 10	..	40,685	99	1	825	2,350	12,937	..
Broken Hill Gold-mining Co. (Ltd.)	16/1/95	13,500	1,875	..	90,000	0 0 6½	242 4 4	..	197	2	..	..	2,738	..
Maratoto Gold-mining Co. (Ltd.)	13/9/98	5,000	250	250	79,998	0 0 6	49 19 6	..	100	15	..	..	1,700	..
Progress-Castle Rock Gold-mining Co. (No Liability)	19/9/95	9,750	3,875	..	65,000	..	..	6,250	90	7	135	362	4,542	..
City of Auckland Gold-mining Co. (No Liability)	7/8/96	18,750	1,235	..	75,000	..	..	30,508	53	..	..	4	2,641	..
Kuranui Gold-mining Co. (Ltd.)	12/9/95	15,000	2,689	..	60,000	..	52 5 10	700	55	7	..	392	3,331	..
Coromandel Freehold Proprietary Gold-mining Co. (No Liability)	11/11/95	18,750	10,313	..	150,000	0 0 0½	..	20,658	164	..	..	..	11,135	..
Waihi Consols Gold-mining Co. (No Liability) ..	18/10/95	16,200	8,294	50	162,000	0 0 8½	258 9 2	117,515	126	..	..	..	8,168	..
Eclipse (Ltd.)	19/11/98	7,500	6,750	750	150,000	0 1 0	..	..	6	32	..	1,425	8,317	..
Matawai Gold-mining Co. (No Liability) ..	12/9/95	6,000	1,476	..	60,000	0 0 5·8	..	..	19	2	1	1	1,504	..
Pukewhau Gold-mining Co. (No Liability) ..	20/9/95	6,000	1,706	..	60,000	0 0 6·8	..	23,024	18	2	10	27	1,721	..
Queen of the North Gold-mining Co. (No Liability)	2/12/97	2,000	795	..	60,000	0 0 3⅙	..	20,300	36	2	93	267	1,004	..
Star of Waihi Gold-mining Co. (No Liability) ..	16/10/96	6,000	900	..	80,000	0 0 2·7	..	..	120	..	..	..	832	..
Hauraki Freeholds (Ltd.)	25/1/99	10,000	..	..	200,000	..	..	..	190	3	..	..	..	..
Buffalo Gold-mining Co. (No Liability) ..	2/8/95	10,000	1,533	..	80,000	0 0 4·6	..	..	175	2	..	746	1,646	..
Harbour View Gold-mining Co. (No Liability) ..	27/6/95	16,000	1,333	..	160,000	0 0 2	..	..	352	4	178	498	2,197	..
Khartoum Gold-mining Co. (Ltd.)	19/5/99	4,350	386	..	87,000	..	126 5 0	..	87	6	..	..	378	..
Maratoto Battery Gold-mining Co. (Ltd.) ..	4/2/99	2,000	1,751	..	40,000	..	248 15 0	..	13	6	..	..	1,743	..
Waiotahi Gold-mining Co. (Ltd.)	1/8/71	18,000	15,000	..	6,000	2 10 0	..	..	46	18	61,900	172,618	140,481	36,390
Victoria Gold-mining Co. (No Liability) ..	2/9/90	23,437	14,630	..	117,183	0 2 10½	..	..	222	4	..	11,897	24,276	..
May Queen Extended Gold-mining Co. (No Liability)	12/11/95	15,000	2,886	..	100,000	0 0 9⅘	219 7 7	14,350	122	6	..	235	3,005	..
New Four-in-hand Gold-mining Co. (Ltd.) ..	30/6/98	22,500	2,752	..	90,000	0 5 0	..	..	152	20	1,670	4,852	5,429	1,118
Queen of Waihi Gold-mining Co. (No Liability)	3/9/95	25,000	2,077	..	100,000	0 1 0	..	25,873	154	..	..	..	2,147	..
Zealandia Gold-mining Co. (No Liability) ..	12/7/95	15,383	4,362	..	13,817	..	..	140,010	37	2	..	..	4,326	..
Waihi South Gold-mining Co. (Ltd.)	3/9/95	19,800	8,798	..	132,000	0 2 5	143 15 2	400	162	14	..	..	9,117	..
Waihi Extended Gold-mining Co. (Ltd.) ..	12/8/95	149,967	3,570	..	149,967	1/3½, 0/3½	617 7 3	506	341	2	..	..	3,798	..
Orlando Gold-mining Co. (Ltd.)	2/4/90	10,000	6,488	..	40,000	..	162 9 0	30,850	14	..	..	2,107	8,585	..
Bunker's Hill Gold-mining Co. (Ltd.)	21/6/96	17,572	8,679	6,000	77,145	4/9, 1/6	178 19 9	200	294	6	871	2,611	13,423	..
New Golconda Gold-mining Co. (No Liability) ..	22/8/95	10,800	4,733	..	54,430	0 0 11¾	..	53,570	71	3	85	238	4,919	..
Waverley Gold-mining Co. (No Liability) ..	13/12/94	6,000	3,122	..	33,237	0 0 11¼	..	26,763	30	2	..	..	3,108	..
Aotea Gold- and Silver-mining Co. (No Liability)	23/11/96	4,000	1,486	..	26,850	0 0 3½	..	53,150	22	..	..	..	1,499	..
Original Great Barrier Gold- and Silver-mining Co. (No Liability)	23/11/96	6,000	2,935	..	66,434	0 0 2¾	..	13,566	30	..	..	..	2,902	..
Totals	..	681,421	162,255	108,309	3,415,011	..	3,328 11 6	765,169	4,467	242	66,630	201,616	326,900	37,508

STATEMENT of AFFAIRS of MINING COMPANIES, as published in accordance with the Mining Companies Acts, 1891 and 1894—*continued*.

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											Quantity.	Value.		
NELSON DISTRICT (INCLUDING WEST COAST).														
		£	£	£		£ s. d.	£ s. d.				Oz.	£	£	£
Mont d'Or Gold-mining and Water-race Co. (Ltd.)	25/7/82	12,000	10,800	..	12,000	0 18 0	..	..	24	22	23,644	..	70,557	33,000
Keep-it-Dark Quartz-mining Co. (Ltd.) ..	2/3/74	20,000	6,208	10,000	20,000	0 16 2½	..	..	52	44	68,973	268,806	187,814	113,417
No. 2 Dark Gold-mining Co. (Ltd.)	26/8/98	5,071	656	..	20,285	0 0 8	4 11 8	2,275	35	2	4	17	708	..
Maritana Gold-mining Co. (Ltd.)	26/8/98	10,000	90	..	20,000	0 0 1½	5 0 5	6,250	15	..	..	..	85	..
Crœsus (Paparoa) Gold-mining Co. (Ltd.) ..	18/5/97	35,938	10,558	23,750	10,000 47,500	0 12 0 0 2 0	192 4 0	..	165	24	1,067	4,346	15,671	..
Taffy Gold-mining Co. (Ltd.)	27/1/99	7,000	1,035	..	28,000	0 0 9	15 0 0	..	36	8	25	102	1,505	..
Grey River Dredging Co. (Ltd.)	10/3/99	8,500	..	2,000	8,500	13/6 & 2/	144 7 6	..	106	1	..	..	2,428	..
Minerva Gold-mining Co. (Ltd.)	24/2/90	12,000	6,428	400	17,637	0 6 1	182 3 4	6,363	28	2	821	..	10,810	..
Nelson Creek Gold-dredging Co. (Ltd.) ..	1/7/99	6,000	1,457	2,500	8,500	0 6 0	343 10 0	..	55	..	..	..	313	..
Ford's Creek Gold-dredging Co. (Ltd.)	15/9/99	5,000	569	1,500	6,500	0 6 0	921 15 0	..	75	..	..	..	213	..
Orwell Creek Gold-dredging Co. (Ltd.)	29/9/99	8,500	1,212	..	8,500	0 5 0	913 7 6	..	166	..	..	..	808	..
Erickson's Reward Gold-dredging Co. (Ltd.) ..	24/10/99	6,000	832	..	6,000	0 5 0	668 2 6	..	149	..	..	..	194	..
Dobson's No. 2 Gold-dredging Company (Ltd.) ..	16/8/99	5,500	1,295	2,000	7,500	0 6 0	355 0 0	..	65	..	..	..	766	..
Three-mile (Greenstone Creek) Dredging Co. (Ltd.)	15/9/99	6,500	856	1,500	8,000	0 4 0	444 5 0	..	58	..	..	..	234	..
Grey River Consolidated Dredging Co. (Ltd.) ..	22/9/99	7,500	1,180	..	15,000	0 2 0	319 18 9	..	167	..	..	..	306	..
Ahaura River Gold-dredging Co. (Ltd.) ..	9/9/99	6,400	1,255	..	25,600	0 1 6	665 0 0	..	260	..	..	..	339	..
Big River Gold-mining Co. (Ltd.)	11/4/91	12,000	600	..	24,000	0 0 6	..	..	62	20	23,422	94,136	52,769	46,200
Snowy Creek United Gold-mining Co. (Ltd.) ..	17/12/98	12,000	1,245	3,600	48,000	0 2 0	34 11 0	18,100	57	..	..	..	1,459	..
Hercules Quartz-mining Co. (Ltd.)	22/11/89	24,000	9,750	..	24,000	0 8 1½	10 5 6	3,686	55	5	3,405	14,329	20,705	3,600
Consolidated Dredging Co. (Ltd.)	18/1/99	6,000	3,900	600	12,000	0 7 6	..	..	42	7	146	569	4,776	..
Lord Edward Gold-mining Co. (Ltd.)	13/11/83	12,000	3,950	12,000	24,000	0 13 3½	..	..	42	5	33	134	4,037	..
Golden Lead Mining Company (Ltd.)	30/10/90	12,000	10,760	..	24,000	0 9 0	40 2 4	6,575	33	2	2,171	8,729	17,898	..
Kelly and Casey Beach Dredging Co. (Ltd.) ..	15/9/99	6,000	980	2,000	6,000	0 4 0	219 15 0	..	91	..	..	..	267	..
Mahinapua Gold-dredging Co. (Ltd.)	31/10/99	4,750	1,135	2,000	4,750	0 8 0	785 0 0	..	26	8	..	..	1,123	..
Ruby Creek Gold-dredging Co. (Ltd.)	19/12/99	5,525	324	2,500	5,525	0 2 0	228 10 0	..	76	..	..	..	295	..
Four River Plain Gold-dredging Co. (Ltd.) ..	4/5/99	15,000	4,001	2,800	15,000	0 7 0	276 5 0	..	86	..	..	..	983	..
Rocklands Beach Gold-dredging Co. (Ltd.) ..	1/9/99	8,312	1,239	1,800	8,312	0 4 6	226 5 0	..	85	..	..	..	499	..
Greenstone Junction Gold-dredging Co. (Ltd.) ..	22/9/99	7,500	1,766	1,500	12,000	0 4 0	233 15 0	..	85	..	..	..	794	..
Virgin Flat Gold-mining Co. (Ltd.)	19/12/98	10,285	7,734	..	10,285	2/6 to £1	278 15 0	50	60	41	..	..	6,315	..
Consolidated Goldfields of New Zealand (Ltd.) ..	22/1/96	225,000	225,000	..	..	1 0 0	..	..	..	133	3,249	13,181	168,494	22,500
Progress Mines of New Zealand (Ltd.)	8/12/96	275,000	75,000	200,000	275,000	1 0 0	..	..	17	291	33,166	136,798	159,308	27,500
Humphrey's Hydraulic Sluicing Co. (Ltd.) ..	2/7/98	145,000	50,000	95,000	145,000	1 0 0	..	..	190	81	63	244	8,869	..
Welcome Gold-mining Co. (Ltd.)	2/7/98	100,000	15,000	85,000	100,000	1 0 0	..	..	160	27	..	..	3,420	..
Buller Junction Gold-dredging Co. (Ltd.) ..	8/6/99	8,125	2,528	1,250	12,500	0 6 0	472 10 0	..	45	..	..	..	1,511	..
Buller Dredges (Ltd.)	2/10/97	6,000	2,993	..	12,000	0 5 0	7 10 0	..	41	11	1,909	7,460	12,086	299
Kirwan's Reward Gold-mining Co. (Ltd.) ..	8/3/98	56,000	1,860	..	56,000	0 0 9¼	298 13 6	..	26	5	..	..	602	..
Pactolus Gold-dredging Co. (Ltd.)	30/8/99	8,125	1,553	1,250	12,500	0 4 6	447 10 0	..	29	..	..	..	296	..
Addison's Long Tunnel Gold-mining Co. (Ltd.) ..	24/9/98	867	414	..	..	Various	6 14 0	26	22	..	470	1,857	2,393	..
Britannia Gold-mining Co. (Ltd.)	3/3/99	10,000	502	..	..	0 5 0	34 7 6	500	18	..	38	150	996	..
Roaring Meg Sluicing and Hydraulic Power Co. (Ltd.)	25/10/97	10,000	5,000	5,000	100,000	0 2 0	..	..	29	6	45	179	3,303	..
Parapara Hydraulic Sluicing and Mining Co. (Ltd.)	18/6/92	49,800	26,360	19,200	302	£200, £50, £60	150 0 0	..	44	18	2,495	9,514	32,447	..
Teremakau Gold-dredging Co. (Ltd.)	24/10/99	7,000	597	..	28,000	0 1 0	802 11 3	..	136	..	..	..	269	..

STATEMENT of AFFAIRS of MINING COMPANIES, as published in accordance with the Mining Companies Acts, 1891 and 1894—*continued*.

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											Quantity.	Value.		
NELSON DISTRICT (INCLUDING WEST COAST)—*continued*.														
		£	£	£		£ s. d.	£ s. d.				Oz.	£	£	£
Alpine Extended Gold-mining Co. (Ltd.) ..	25/8/97	25,000	..	..	50,000	..	..	..	176	58	7,325	28,493	31,684	..
Johnston's United Mining Co. (Ltd.)	27/6/81	18,585	13,826	1,668	20,000	/2½, 18/8	3 15 0	..	45	2	10,439	..	50,379	1,916
Julian Gold-mining Co. (Ltd.)	17/6/93	..	..	..	48,000	..	13 14 1	31,229	..	..	..	..	..	..
Dee Creek Gold-sluicing Co. (No Liability) ..	6/5/97	36,000	5,042	14,100	36,000	£1, 2/7, 4/7	..	..	49	..	..	345	5,427	..
Pactolus Sluicing Co. (No Liability)	25/4/98	25,000	4,495	13,000	25,000	0 7 9	..	825	50	6	1	5	5,492	..
Waiwhero Sluicing Co. (No Liability)	28/9/97	31,000	12,941	16,000	31,000	0 18 6	221 7 6	2,000	84	13	324	1,297	16,721	..
Kumara Long Tunnel Gold-mining Co. (Ltd.) ..	16/5/82	8,000	7,433	..	16,000	0 9 3⅓	..	3,440	21	7	5,077	27,127	25,820	7,947
Totals	..	1,341,783	542,359	523,918	1,454,696	..	9,966 2 4	81,319	3,438	849	188,312	617,818	934,188	256,379
OTAGO DISTRICT.														
Westralia and New Zealand Gold-explorers (Ltd.)	4/2/96	6,383	1,596	..	63,839	0 5 0	29 5 0	..	34	..	1,514	5,867	13,684	..
Golden Key Gold-mining Co. (Ltd.)	1/9/98	2,000	250	1,750	2,000	1 0 0	..	..	15	4	71	273	1,135	..
Achilles Gold-mines (Ltd.)	22/4/98	85,747	34,167	51,448	685,979	0 2 0	132 0 0	..	1,634	..	..	..	36,840	..
Gleniti Gold-dredging Co. (Ltd.)	28/10/99	2,800	419	2,200	1,700	0 10 0	443 15 0	..	20	..	..	..	330	..
Golden Standard Dredging Co. (Ltd.)	9/10/99	6,500	1,950	1,500	8,000	0 6 0	993 15 0	..	107	1	..	..	308	..
Dunstan Lead Gold-dredging Co. (Ltd.) ..	31/5/99	11,000	6,791	3,000	14,000	0 14 0	909 0 0	..	180	..	..	..	495	..
Fraser Flat Gold-dredging Co. (Ltd.)	10/3/99	10,000	4,391	3,000	13,000	0 10 0	608 15 0	..	164	..	..	..	3,655	..
Golden River Gold-dredging Co. (Ltd.)	7/8/99	6,400	1,896	..	25,600	0 2 0	663 16 3	..	211	..	..	..	430	..
Bannockburn Creek Dredging Co. (Ltd.) ..	18/7/99	8,000	3,548	..	8,000	0 12 0	1,251 17 0	..	137	..	..	..	653	..
Blue Duck Gold-dredging Co. (Ltd.)	18/7/99	5,500	2,405	1,500	7,000	0 12 0	895 10 0	..	123	..	..	..	963	..
Cardrona No. 1 Gold-dredging Co. (Ltd.) ..	27/4/99	4,300	1,545	..	5,500	0 10 0	605 10 0	..	72	..	..	..	328	..
Golden Spec Dredging Co. (Ltd.)	21/8/99	2,800	1,714	1,200	2,800	0 15 0	386 5 0	..	60	..	..	..	1,539	..
Golden Terrace Dredging Co. (Ltd.)	14/12/97	5,000	3,750	..	5,000	0 15 0	..	..	69	19	2,436	9,318	8,598	1,000
Golden Vein Gold-dredging Co. (Ltd.)	13/10/99	5,900	609	..	5,900	0 4 0	571 5 0	..	118	..	..	..	300	..
Sailor's Bend Gold-dredging Co. (Ltd.)	1/9/99	6,500	2,118	..	6,500	0 8 0	482 10 0	..	128	..	..	..	386	..
Second Magnetic Gold-dredging Co. (Ltd.) ..	14/6/99	6,500	3,638	..	6,500	0 14 0	911 15 0	..	126	..	..	..	1,912	..
Shepherd's Creek Gold-dredging Co. (Ltd.) ..	11/8/99	3,500	1,218	1,500	5,000	0 10 0	532 0 0	..	76	..	..	..	257	..
Smith's Creek and Bannockburn Deep Lead Dredging Co. (Ltd.)	21/7/99	10,000	2,793	2,000	12,000	0 8 0	1,207 5 0	..	168	..	..	..	1,194	..
Spec Gully Gold-dredging Co. (Ltd.)	28/6/99	3,000	1,510	1,000	4,000	0 12 0	290 0 0	..	63	..	..	..	1,396	..
Voltaic Prospecting and Dredging Co. (Ltd.) ..	26/10/99	2,500	254	..	2,500	0 4 0	246 5 0	..	44	..	..	..	152	..
Waimumu Extended Dredging Co. (Ltd.) ..	25/4/99	2,000	1,371	4,500	6,500	0 18 0	429 10 0	..	44	..	..	..	1,466	..
Alexandra Lead Gold-dredging Co. (Ltd.) ..	26/7/99	11,000	4,458	..	14,000	0 10 0	1,041 15 0	..	186	..	..	..	411	..
Enfield Gold-dredging Co. (Ltd.)	31/10/99	4,600	830	2,000	4,600	0 4 0	90 5 0	..	58	..	..	..	59	..
Golden Elbow Dredging Co. (Ltd.)	8/11/99	6,500	526	2,000	8,500	0 2 0	124 5 0	..	130	..	..	..	281	..
Great Lead Gold-dredging Co. (Ltd.)	11/9/99	5,500	948	..	5,500	0 6 0	702 10 0	..	98	..	..	..	366	..
Metallic Gold-dredging Co. (Ltd.)	19/6/99	6,000	2,947	..	7,500	0 12 0	653 5 0	..	150	..	..	..	853	..
Number Two Matau Gold-dredging Co. (Ltd.) ..	25/7/99	10,000	983	..	12,000	0 2 0	17 10 0	..	130	..	..	..	463	..
Golden Mile Dredging Co. (Ltd.)	14/11/99	5,800	706	1,500	1,500 5,800	1 0 0 0 4 0	459 5 0	..	..	..	..	..	..	..

STATEMENT of AFFAIRS of MINING COMPANIES, as published in accordance with the Mining Companies Acts, 1891 and 1894—*continued.*

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											Quantity.	Value.		
OTAGO DISTRICT—*continued.*														
		£	£	£		£ s. d.	£ s. d.				Oz.	£	£	
Charlton Creek Gold-dredging Co. (Ltd.) ..	5/5/99	4,000	2,888	1,000	5,000	0 15 0	112 10 0	..	45	7	..	..	3,467	..
Waipori Gold Lead Dredging Co. (Ltd.) ..	4/10/99	1,650	1,031	1,350	3,000	0 15 0	206 5 0	..	43	..	..	..	465	..
Hartley and Riley Beach-dredging Co. (Ltd.) ..	14/7/97	6,500	6,300	200	6,500	1 0 0	..	..	244	9	9,696	37,582	10,172	29,250
Jutland Flat (Waipori) Gold-mining Co. (Ltd.) ..	2/7/90	15,000	4,000	3,750	10,000 5,000	0 8 0 0 15 0	..	..	47	11	8,123	31,695	22,261	8,250
Upper Waipori Alluvial Gold-dredging Co. (Ltd.)	3/9/89	12,000	5,950	5,000	24,000	0 8 6	..	..	85	9	8,372	32,174	28,188	4,200
Cardrona Valley Gold-dredging Co. (Ltd.) ..	8/7/99	5,500	1,884	1,000	5,500	0 10 0	366 10 0	..	99	..	..	..	283	..
Fourteen-mile Beach Gold-dredging Co. (Ltd.) ..	25/10/98	11,300	4,308	2,600	10,000	0 12 0	562 0 0	..	118	24	..	..	2,797	..
Nugget Gold-dredging Co. (Ltd.)	11/3/99	3,500	2,458	1,500	5,000	0 16 0	342 4 0	..	52	1	..	..	290	..
Golden Beach Hydraulic Elevating and Dredging Co. (Ltd.)	20/8/97	6,000	5,719	7,000	12,996	1 0 0	281 4 0	125	111	11	3,165	12,090	5,677	1,625
Golden Bed Dredging Co. (Ltd.)	5/5/99	8,000	4,330	2,000	8,000	0 12 0	469 15 0	75	131	1	..	..	525	..
Great Western Gold-dredging Co. (Ltd.) ..	16/2/99	3,475	1,802	1,200	4,675	0 18 0	1,325 15 0	..	84	1	..	..	352	..
Craig Flat Dredging Co. (Ltd.)	11/5/99	6,500	588	1,500	8,000	0 2 0	37 10 0	..	79	1	..	..	376	..
Miller's Flat Electric Dredging Co. (Ltd.) ..	20/12/98	3,250	1,959	1,750	5,000	0 15 0	478 5 0	..	48	2	..	..	852	..
Meg and Annie Gold-dredging Co. (Ltd.) ..	9/5/99	5,500	1,766	1,500	7,000	0 8 0	434 3 0	..	56	..	..	..	873	..
Champion Gold-mining Co. (Ltd.)	30/12/98	2,400	1,800	..	3,600	0 10 0	..	..	49	11	..	742	3,772	..
Empire Gold-dredging Co. (Ltd.)	13/7/97	5,000	5,000	..	5,000	1 0 0	..	..	35	15	1,892	7,284	11,402	1,760
Merrimac Gold-dredging Co. (Ltd.)	18/8/99	6,400	2,350	1,600	8,000	0 10 0	750 10 0	..	102	..	..	..	1,032	..
Majestic Gold-dredging Co. (Ltd.)	31/7/99	5,700	2,301	800	6,500	0 10 0	549 10 0	..	109	..	..	..	551	..
Springvale Dredging Co. (Ltd.)	8/4/99	2,500	2,500	1,500	2,500	1 0 0	..	..	45	..	..	..	2,124	..
Roxburgh Amalgamated Mining and Sluicing Co. (Ltd.)	2/3/89	29,152	12,737	15,000	29,152	18/ and £1	..	825	145	22	15,208	59,016	55,119	17,954
Kawarau Bridge Gold-dredging Co. (Ltd.) ..	22/8/99	5,750	1,751	2,000	11,500	0 4 0	1,124 10 0	..	140	..	..	..	172	..
Glenrock Consolidated (Ltd.)	1/7/95	45,000	45,000	..	450,007	0 10 0	4,687 3 6	3,105	1,400	18	Mill, 7,890 Cyanide, 531	31,694 1,708	32,472	..
Golden Treasure Dredging Co. (Ltd.)	11/7/93	1,500	1,384	1,500	3,000	1 0 0	..	124	29	6	6,193	23,843	14,974	9,707
Golden Run Dredging Co. (Ltd.)	29/6/91	9,000	9,827	2,000	9,000	1 0 0	289 12 6	1,085	109	15	6,248	24,054	24,079	5,194
ttrick Gold Steam-dredging Co. (Ltd.) ..	29/8/90	2,500	1,938	2,000	4,500	0 15 6	..	..	52	6	4,616	17,766	16,305	3,150
Golden Gate Dredging Co. (Ltd.)	13/3/95	2,500	2,500	..	2,500	1 0 0	..	..	44	6	4,918	18,934	13,681	7,188
Phœnix Water-race Co. (Registered)	12/10/67	1,500	1,500	1,500	1,000	1 10 0	..	..	18	..	..	..	..	6,463
Upper Waimumu Dredging Co. (Ltd.)	21/4/99	5,500	644	2,000	7,500	0 3 0	171 5 0	..	68	..	..	..	664	..
Deep Stream Amalgamated Hydraulic Sluicing Co. (Ltd.)	4/2/97	8,500	8,500	3,500	12,000	1 0 0	..	..	58	16	..	8,248	16,800	2,650
Gibbs' Beach (Molyneux River) Gold-dredging Co. (Ltd.)	28/9/99	6,400	1,363	1,600	8,000	0 6 0	557 5 0	..	95	..	..	..	660	..
Leaning Rock Gold-dredging Co. (Ltd.) ..	7/10/99	7,000	708	1,500	8,500	0 4 0	692 10 0	..	114	..	..	..	329	..
Golden Banner Gold-dredging Co. (Ltd.) ..	6/10/99	5,500	474	1,600	7,100	0 4 0	626 0 0	..	125	..	..	..	278	..
Patterson's Freehold Gold-mining Co. (Ltd.) ..	15/7/99	8,000	1,102	4,000	12,000	0 4 0	540 2 0	..	12	..	..	..	1,034	..
Premier Waikaka Gold-dredging Co. (Ltd.) ..	15/9/99	4,200	983	1,300	5,500	0 8 0	696 15 0	..	77	..	..	..	599	..
Golden Reward Gold-dredging Co. (Ltd.) ..	20/9/99	6,000	862	1,500	7,500	0 4 0	338 0 0	..	127	..	..	..	441	..
Vincent Gold-dredging Co. (Ltd.)	13/9/97	5,500	4,800	700	5,500	1 0 0	..	30	121	7	1,289	4,965	9,166	684
New Alexandra Gold-dredging Co. (Ltd.) ..	10/12/98	8,500	6,804	1,500	8,500	1 0 0	196 0 0	..	123	8	..	..	5,333	..
Manorburn Gold-dredging Co. (Ltd.)	28/1/96	3,000	3,000	..	3,000	1 0 0	..	..	7	7	2,872	11,188	12,102	2,250

STATEMENT of AFFAIRS of MINING COMPANIES, as published in accordance with the Mining Companies Acts, 1891 and 1894—*continued*.

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											Quantity.	Value.		
OTAGO DISTRICT—*continued*.														
		£	£	£		£ s. d.	£ s. d.				Oz.	£	£	£
Electric Extended Gold-dredging Co. (Ltd.) ..	25/5/99	7,800	3,468	2,200	10,000	0 12 0	1,212 2 6	..	128	..	..	..	413	..
Cromwell Gold-dredging Co. (Ltd.)	10/10/98	5,300	4,972	1,700	5,300	1 0 0	328 9 6	..	112	..	..	..	4,666	..
Arrow Junction Gold-dredging Co. (Ltd.) ..	7/10/99	6,500	1,606	..	6,500	0 8 0	993 11 0	..	116	..	..	..	268	..
Arthur's Point Gold-dredging Co. (Ltd.) ..	3/11/99	6,675	921	..	6,675	0 4 0	413 15 0	..	130	..	..	..	190	..
Golden Falls Dredging Co. (Ltd.)	11/9/99	4,500	1,121	..	4,500	0 7 0	453 15 0	..	97	..	..	..	172	..
Leviathan Gold-dredging Co. (Ltd.)	3/10/99	9,000	1,884	..	9,000	0 6 0	816 0 0	..	111	..	..	..	850	..
Sixteen-mile Beach (Molyneux) Dredging Co. (Ltd.)	9/10/99	6,500	890	..	6,500	0 4 0	410 0 0	..	82	..	..	..	254	..
Royal Maori Gold-dredging Co. (Ltd.)	20/10/99	6,000	1,023	2,000	8,000	0 6 0	777 0 0	..	94	..	..	..	241	..
Kia Ora Gold-dredging Co. (Ltd.)	21/9/99	5,900	583	..	5,900	0 4 0	597 10 0	..	121	..	..	..	267	..
Shotover Gold-dredging Co. (Ltd.)	11/9/99	5,400	812	..	5,400	0 5 0	537 15 0	..	122	..	..	..	318	..
Electric Gold-dredging Co. (Ltd.)	2/9/99	26,000	10	25,990	26,000	1 0 0	..	..	77	10	723	2,778	693	1,300
Junction Electric Gold-dredging Co. (Ltd.) ..	2/9/99	26,000	10	25,990	26,000	1 0 0	..	..	77	11	738	2,837	764	1,300
Magnetic Gold-dredging Co. (Ltd.)	12/7/97	7,000	5,000	2,000	7,000	1 0 0	..	..	154	8	3,447	13,313	18,099	6,966
Macrae's Flat Gold-dredging Co. (Ltd.) ..	25/4/98	5,400	4,650	750	5,400	1 0 0	..	..	59	6	148	569	6,324	..
Waikaka Forks Gold-dredging Co. (Ltd.) ..	18/4/99	6,000	3,112	800	6,000	0 15 0	786 6 0	..	88	..	..	..	2,519	..
Moonlight Sluicing Co. (Ltd.)	14/5/94	2,000	1,363	450	2,000	0 17 6	..	..	26	3	938	3,614	4,073	1,100
Tuapeka Dredging Co. (Ltd.)	31/7/97	2,800	2,500	300	2,800	1 0 0	..	..	34	7	908	3,496	5,075	770
Evans Flat Dredging Co. (Ltd.)	14/8/97	2,800	2,400	400	2,800	1 0 0	..	..	48	7	1,058	4,073	5,141	1,378
Reliance Gold-dredging Co. (Ltd.)	30/10/99	3,600	224	..	3,000	0 2 0	56 5 0	..	44	..	..	..	65	..
Alpine No. 2 Gold-dredging Co. (Ltd.)	1/5/99	4,800	2,740	700	5,500	1 0 0	176 0 0	..	82	..	..	..	1,472	..
Gibbston Gold-dredging Co. (Ltd.)	19/9/99	6,400	1,147	..	6,400	0 4 0	90 0 0	..	103	..	..	..	302	..
Adams Flat Gold-dredging Co. (Ltd.)	24/4/99	1,500	1,222	500	2,000	0 18 0	131 0 0	..	31	7	361	138	1,301	..
First Chance Gold-dredging Co. (Ltd.) ..	20/7/99	7,500	2,148	3,000	4,500 6,000	1 0 0 0 4 0	242 8 0	..	86	..	4	17	1,559	..
Paul's Beach Gold-dredging Co. (Ltd.) ..	29/11/99	6,000	401	..	6,000	0 2 0	82 10 0	..	105	..	..	..	271	..
Upper Clutha Gold-dredging Co. (Ltd.) ..	6/10/99	4,725	876	..	4,725	0 6 0	452 5 0	..	71	..	..	..	216	..
Central Electric Gold-dredging Co. (Ltd.) ..	8/5/99	6,000	3,013	1,000	7,000	0 12 0	62 10 0	..	130	..	..	..	1,668	..
Upper Magnetic Gold-dredging Co. (Ltd.) ..	31/7/99	6,400	2,587	1,600	8,000	0 12 0	410 10 0	..	136	..	..	..	1,144	..
Alpine Consols Dredging Co. (Ltd.)	19/5/99	5,500	2,863	2,000	7,500	0 14 0	440 0 0	..	104	..	..	..	1,431	..
Halfway House Dredging Co. (Ltd.)	29/5/99	5,500	3,453	..	5,500	0 14 0	342 10 0	..	119	..	..	..	363	..
Vincent Extended Gold-dredging Co. (Ltd.) ..	30/6/99	6,467	2,112	1,500	7,967	0 10 0	218 9 0	..	128	..	..	..	336	..
Great Central Dredging Co. (Ltd.)	24/8/99	6,000	1,881	2,000	8,000	0 10 0	326 10 0	..	131	..	..	..	290	..
Cromwell Proprietary Gold-mining Co. (Ltd.) ..	22/12/97	100,000	..	..	..	..	..	..	..	1	4,143	15,203	3,154	..
Endeavour Gold-dredging Co. (Ltd.)	29/8/99	8,000	2,145	2,000	10,000	0 6 0	254 13 0	..	157	..	..	..	1,224	..
Golden Chain Dredging Co. (Ltd.)	26/9/99	8,000	1,200	..	8,000	0 4 0	400 0 0	..	140	..	..	..	375	..
Naumai Gold-dredging Co. (Ltd.)	8/4/99	5,000	3,356	2,000	7,000	0 18 0	1,144 0 0	..	70	..	..	..	1,154	..
Enterprise Gold-dredging Co. (No Liability) ..	24/8/91	2,000	2,000	..	2,000	1 0 0	..	..	22	7	5,402	20,799	16,599	5,650
Upper Waikaia Sluicing Co. (Ltd.)	4/12/97	3,000	3,000	1,500	3,000	1 0 0	..	..	15	7	27	105	2,349	..
Sunlight Gold-dredging Co. (Ltd.)	14/10/98	3,000	3,000	700	3,000	1 0 0	..	..	58	7	722	2,679	4,052	750
Matau Dredging Co. (Ltd.)	16/10/97	6,200	6,200	..	7,000	1 0 0	..	..	117	7	2,605	10,046	8,565	6,475
Clyde Dredging Co. (Ltd.)	17/5/95	3,850	3,850	150	4,000	1 0 0	..	..	64	7	5,594	21,638	10,264	10,600
Rex Hill Tin-mining Co. (Ltd.)	3/11/92	3,750	3,708	1,000	15,000	0 5 0	38 7 6	150	57	..	..	..	4,191	..
Success Gold-dredging Co. (Ltd.)	16/7/97	2,400	2,400	..	2,400	1 0 0	..	..	19	7	2,115	8,141	7,644	2,880
Lawrence Gold-dredging Co. (Ltd.)	11/10/99	450	.369	1,050	1,500	1 0 0	81 5 0	..	16	6	..	..	91	..
White Star Gold-dredging Co. (Ltd.)	16/10/99	5,000	775	..	5,000	0 6 0	724 15 0	..	81	..	..	..	214	..

STATEMENT of AFFAIRS of MINING COMPANIES, as published in accordance with the Mining Companies Acts, 1891 and 1894—*continued.*

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											Quantity.	Value.		
OTAGO DISTRICT—*continued.*														
		£	£	£		£ s. d.	£ s. d.				Oz.	£	£	£
Monte Christo Dredging Co. (Ltd.)	7/6/99	6,900	2,246	1,100	7,000	0 10 0	729 9 0	..	117	..	..	..	265	..
West Matau Dredging Co. (Ltd.)	24/7/99	12,000	1,103	2,000	12,000	0 2 0	97 10 0	..	189	..	..	..	609	..
Tacon's Cardrona Gold-dredging Co. (Ltd.) ..	27/9/99	4,750	745	1,250	4,750	0 6 0	680 1 0	..	105	..	..	..	297	..
Central Charlton Dredging Co. (Ltd.)	8/12/99	5,115	364	..	5,115	0 2 0	147 15 0	..	66	..	..	..	307	..
Gold Deposit Dredging Company (Ltd.) ..	14/12/99	6,800	587	..	6,800	0 2 0	93 5 0	..	159	..	..	..	260	..
Dart River Gold-dredging and Prospecting Co. (Ltd.)	19/10/99	20,000	1,517	..	20,000	0 2 0	482 15 0	..	195	..	..	..	513	..
Morning Star Gold-mining Co. (No Liability) ..	26/1/95	29,533	4,865	12,000	29,533	0 0 9	107 7 9	12,000	130	2	12,109	49,038	43,239	11,463
Golden Site Extended Gold-mining Co. (Ltd.) ..	11/2/97	57,828	7,680	43,750	57,828	0 17 10	95 8 4	1,187	151	7	397	1,546	9,210	..
Skipper's Sluicing Co. (Ltd.)	30/7/97	3,500	3,500	..	3,500	1 0 0	..	..	24	9	274	1,031	4,482	..
Chatto Creek Dredging Co. (Ltd.)	12/8/97	5,000	4,400	600	5,000	1 0 0	..	..	91	8	827	3,224	7,917	..
Inch Valley Gold-dredging Co. (Ltd.)	15/9/98	2,600	2,600	2,400	5,000	1 0 0	..	..	62	8	638	2,457	5,084	500
Golden Point Dredging Company (Ltd.) ..	31/8/97	5,400	5,400	600	6,000	1 0 0	..	..	125	8	881	3,410	10,235	..
Earnscleugh No. 3 Dredging and Electric Power Co. (Ltd.)	10/3/99	15,000	9,493	3,500	18,500	0 16 0	2,506 15 0	..	119	..	..	..	4,337	..
Bakery Flat Sluicing Co. (Ltd.)	10/9/96	2,500	1,762	300	2,500	0 16 6	1 0 0	..	27	9	801	3,064	4,711	..
Coal Creek Flat Dredging Co. (Ltd.)	18/9/99	7,000	1,592	2,000	9,000	0 5 0	158 10 0	..	189	2	..	..	2,856	..
Last Chance Hydraulic Sluicing, Elevating, and Dredging Co. (Ltd.)	27/7/99	8,700	2,328	3,300	12,000	0 10 0	2,891 15 0	..	131	11	..	..	1,948	..
Shotover Quartz-mining Co. (No Liability) ..	9/3/98	6,000	2,500	1,500	24,000	0 3 4	..	..	32	7	..	..	2,368	..
Post-office Creek (Waipori) Gold-mining Co. (Ltd.)	10/6/98	2,500	2,300	200	2,500	1 0 0	..	..	28	11	..	554	2,971	..
Olrig Dredging Co. (Ltd.)	13/3/99	7,000	3,828	1,000	7,000	0 18 0	1,571 14 0	..	78	..	..	..	3,113	..
Bendigo Gold-dredging Co. (Ltd.)	9/10/99	8,500	830	2,500	8,500	0 4 0	870 10 0	..	167	..	..	..	247	..
River Molyneux Gold-dredging Co. (Ltd.) ..	14/10/99	9,000	863	2,000	9,000	0 4 0	937 10 0	..	173	..	..	..	262	..
Gentle Annie Gold-dredging Co. (Ltd.) ..	4/10/99	6,900	1,269	1,600	8,500	0 5 0	459 17 6	..	127	..	..	..	223	..
Kawarau Consolidated Gold-dredging Co. (Ltd.) ..	20/9/99	5,600	1,060	1,900	5,600	0 6 0	1,180 0 0	..	95	..	..	..	64	..
Roxburgh Jubilee Dredging Co. (Ltd.)	22/11/99	8,500	841	3,500	8,500	0 2 0	9 9 0	..	78	..	..	..	526	..
Alexandra Bonanza Gold-dredging and Sluicing Co. (Ltd.)	5/9/99	12,000	1,860	3,000	12,000	0 4 0	1,740 0 0	..	120	..	..	..	640	..
Otago Gold-dredging Co. (Ltd.)	20/5/95	4,000	2,000	2,000	4,000	1 0 0	..	..	43	6	3,742	14,634	9,521	5,500
Gold Creek Dredging Co. (Ltd.)	3/3/98	4,500	2,460	2,000	4,500	1 0 0	39 14 0	..	65	8	..	1,430	4,061	..
Sunrise Gold-mining Co. (No Liability) ..	14/10/97	2,138	2,138	5,000	17,035	5/ on B, 3/6 on C	2 10 0	945	50	2	..	..	2,239	..
Gold Queen Dredging Co. (Ltd.)	3/2/99	7,000	4,890	2,000	9,000	0 16 0	709 12 0	..	208	..	..	..	4,383	..
Richard's Beach Gold-dredging Co. (Ltd.) ..	19/5/99	8,000	3,600	2,000	6,000 2,000	0 12 0 1 0 0	779 10 0	..	118	..	..	..	1,078	..
Mokoia Gold-dredging Co. (Ltd.)	21/4/99	6,500	2,625	1,250	5,250 1,250	0 10 0 1 0 0	611 10 0	..	72	..	..	..	2,987	..
Grey Duck Dredging Co. (Ltd.)	26/9/99	5,500	596	..	5,500	0 3 0	228 15 0	..	90	..	..	..	383	..
Naseby Dredging and Hydraulic Sluicing Co. (Ltd.)	16/10/97	5,000	2,138	2,000	5,000	0 14 3	..	..	21	10	1,224	4,713	8,701	..
Winding Creek Gold-mining Co. (Ltd.)	5/2/98	14,167	8,000	6,167	14,167	1 0 0	..	..	19	18	..	3,222	12,799	..
Rolling Stone Gold-dredging Co. (Ltd.) ..	13/6/99	3,000	1,650	..	3,000	0 11 0	..	..	11	5	..	..	1,645	..
Golden Gravel Gold-dredging Co. (Ltd.) ..	29/8/99	5,965	1,366	1,500	5,965	0 6 0	424 0 0	..	152	..	..	..	435	..
Fraser Basin Hydraulic Elevating Co. (Ltd.) ..	30/6/99	1,613	763	488	2,100	0 12 0	102 10 0	..	29	7	..	..	690	..
Harris Beach Gold-dredging Co. (Ltd.) ..	19/9/99	5,500	827	1,500	7,000	0 4 0	272 15 0	..	128	..	..	..	205	..
Long Valley Gold-dredging Co. (Ltd.)	31/8/99	7,000	2,431	2,000	9,000	0 8 0	388 0 0	..	95	..	..	..	228	..
Blue Spur and Gabriel's Gully Consolidated Gold Co. (Ltd.)	1/2/88	91,266	37,622	60,000	91,266	1 0 0	..	..	369	40	33,708	132,091	137,248	24,922
Paddy's Alley Gold-mining Co. (Ltd.)	26/4/99	335	310	25	335	1 0 0	..	..	8	2	36	..	353	..

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											Quantity.	Value.		
OTAGO DISTRICT—*continued.*														
		£	£	£		£ s. d.	£ s. d.				Oz.	£	£	£
Bokoraki Gold-mining Co. (No Liability) ..	9/8/98	1,500	664	550	1,500	£1, 15/, 14/, 12/, 11/	48 5 0	650	10	3	21	..	654	..
Golden Cave Reefing Co. (No Liability) ..	1/2/99	9,000	268	7,000	9,000	17/6, 5/6, 4/6, 4/, 3/6, 3/	5 12 6	125	16	..	3	13	214	..
Eclipse Gold-dredging Co. (Ltd.)	4/8/99	6,000	2,533	1,500	7,500	0 10 0	467 0 0	..	111	..	..	..	408	..
Waimumu Gold-dredging Co. (Ltd.)	20/11/97	6,000	6,000	1,000	7,000	1 0 0	..	..	73	9	720	2,764	8,420	350
Dunedin Gold-dredging Co. (Ltd.)	1/9/81	8,700	7,540	..	8,700	0 17 4	..	..	96	8	16,599	63,893	48,867	15,270
Remarkables Gold-dredging Co. (Ltd.)	27/9/99	3,900	768	800	4,700	0 6 0	402 0 0	..	65	..	..	..	60	..
Golden Link Dredging Co. (Ltd.)	10/7/99	5,800	2,797	1,200	7,000	0 12 0	683 10 0	..	126	..	..	..	1,205	..
Manuherikia Gold-dredging Co. (Ltd.) ..	1/8/99	6,000	1,724	6,000	12,000	0 8 0	711 6 0	..	50	..	..	..	683	..
Moa Flat Gold-dredging Co. (Ltd.)	26/4/99	8,000	4,692	2,000	10,000	0 14 0	908 0 0	..	128	..	..	..	1,261	..
Boundary Creek Gold-dredging Co. (Ltd.) ..	7/9/99	6,000	1,608	2,000	8,000	0 8 0	792 0 0	..	139	..	..	..	237	..
River Bank Gold-dredging Co. (Ltd.)	22/11/98	3,550	..	450	4,000	0 16 0	351 14 0	..	65	..	..	..	1,591	..
Galvanic Gold-dredging Co. (Ltd.)	22/6/99	6,000	2,839	1,500	7,500	0 12 0	760 15 0	..	161	..	..	..	845	..
Eureka Gold-dredging Co. (Ltd.)	14/11/99	..	..	12,000	12,000	1 0 0	..	..	8	9	60	231	163	..
Barewood Quartz-mining Co. (Ltd.)	18/9/95	420	420	2,400	84	5 0 0	..	..	24	1	989	3,566	4,362	451
Mount Pisa Gold-dredging Co. (Ltd.)	26/10/99	5,040	442	1,500	6,540	0 2 0	61 15 0	..	126	..	..	..	225	..
Arrow Falls Gold-mining Co. (Ltd.)	4/4/98	30,000	1,167	27,750	30,000	£1 & 17/10	..	..	33	..	55	215	1,685	..
Zealandia Syndicate (Ltd.)	21/10/99	4,000	3,775	3,000	7,000	1 0 0	225 10 0	..	53	2	..	..	165	..
Moonlight No. 2 Sluicing Co. (Ltd.)	1/6/98	8,960	4,965	2,500	11,460	£1 & 4/	607 10 0	..	110	26	..	..	5,452	..
Oraki Gold-mining Co. (Ltd.)	22/5/99	2,000	1,200	..	2,000	0 12 0	..	..	7	4	52	206	1,390	..
Ourawera Gold-mining Co. (Ltd.)	23/5/95	3,000	2,800	200	3,000	1 0 0	..	..	20	11	2,521	9,958	10,920	2,065
Lion Gold-mining Co. (Ltd.)	15/12/97	11,545	8,044	3,500	11,545	1 0 0	..	..	73	20	..	..	10,209	..
Nokomai Victory Gold-mining Co. (Ltd.) ..	2/11/99	2,000	..	1,000	2,000	..	..	..	6	..	..	..	..	..
Enterprise Hydraulic Sluicing Co. (Ltd.) ..	7/2/98	2,000	..	1,700	2,000	0 17 0	..	..	12	3	225	864	697	175
Nil Desperandum Gold-dredging Co. (Ltd.) ..	27/5/99	4,400	4,400	1,900	6,300	1 0 0	..	..	25	7	650	2,535	2,528	..
Galtee More Gold-dredging Co. (Ltd.)	22/12/98	5,000	5,000	2,000	7,000	1 0 0	..	..	94	6	263	1,015	6,127	..
Premier No. 1 Gold-dredging Co. (Ltd.) ..	7/11/99	4,500	443	..	4,500	0 2 0	12 10 0	..	90	..	..	..	163	..
Riley's Beach Gold-dredging Co. (Ltd.) ..	4/3/99	4,500	1,000	3,500	4,500	1 0 0	..	..	18	7	..	2,150	69	2,081
Alpine Gold-dredging Co. (Ltd.)	27/7/99	6,000	3,500	2,500	6,000	1 0 0	..	..	14	7	..	1,320	674	600
Tarawera Mining Co. (No Liability)	30/3/98	24,000	1,753	12,000	24,000	0 3 0	..	2,825	33	..	..	..	1,714	..
Alpha Gold-mining Co. (No Liability)	1/9/97	24,000	6,692	12,000	24,000	0 11 10	..	4,400	81	7	62	203	6,924	..
Waipori Consolidated Gold-dredges (No Liability)	22/3/99	2,500	2,275	225	2,250	1 0 0	..	..	..	..	59	221	2,463	..
Molyneux Hydraulic Elevating and Gold-mining Co. (Ltd.)	19/12/90	8,490	8,488	1,200	9,690	1 0 0	2 10 0	..	94	8	..	12,524	20,045	3,096
Perseverance Gold-dredging Co. (Ltd.) ..	19/4/99	14,000	5,373	6,000	14,000	£1 & 10/	..	..	40	8	44	169	5,584	..
Morning Star Gold-dredging Co. (Ltd.) ..	1/8/99	2,000	1,323	3,500	5,500	0 17 0	377 5 0	..	87	7	95	365	1,584	..
Nokomai Hydraulic Sluicing Co. (Ltd.) ..	26/3/98	20,800	3,800	17,000	2,080	10 0 0	..	..	21	35	1,913	7,295	8,244	2,050
Ophir Gold-dredging Co. (Ltd.)	11/11/97	4,000	4,000	500	4,000	1 0 0	..	..	78	8	663	2,552	7,810	..
Dome Creek Gold-dredging Co. (Ltd.)	12/9/99	5,250	845	1,250	5,250	0 9 0	555 0 0	..	55	..	..	..	398	..
Sailors' Gully (Waitahuna) Gold-mining Co. (Ltd.)	3/6/96	2,000	100	1,800	2,000	0 10 0	..	..	9	4	820	2,897	3,020	100
Totals		1,588,489	589,324	565,983	2,765,608	..	68,805 8 10	28,731	19,060	726	194,418	783,357	959,442	209,117
Grand totals		3,611,693	1,293,938	1,198,210	6,635,315	..	82,100 2 8	875,219	26,965	1,817	449,360	1,602,791	2,220,530	503,004

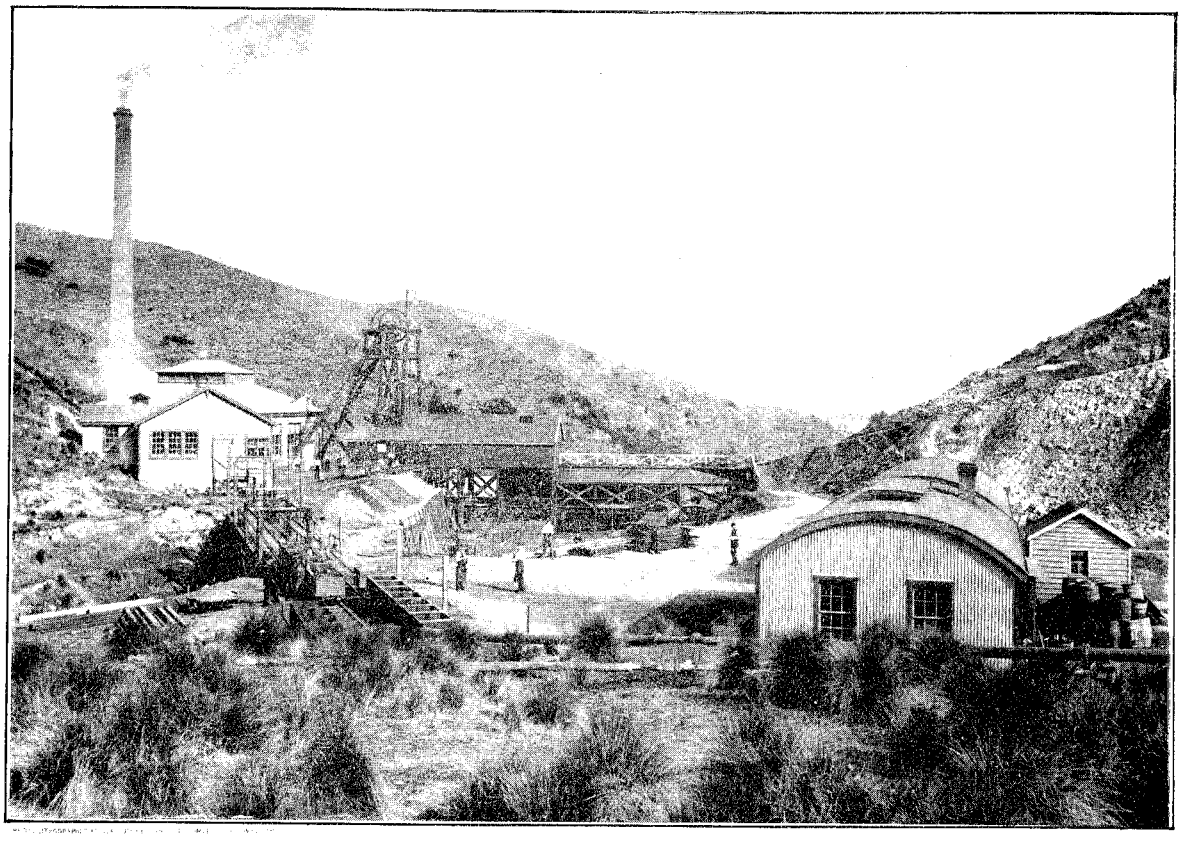
STATEMENT of AFFAIRS of MINING COMPANIES, as defined by Section 2 of "The Mining Companies Acts Amendment Act, 1897," and published in accordance with "The Mining Companies Acts Amendment Act, 1897."

Name of Company.	Date of Registration of Office in Colony.	Subscribed Capital.	Amount of Capital actually paid up in Colony.	Value of Scrip given to Shareholders on which no Cash paid.	Number of Shares on Colonial Register.	Amount paid up per share: Colonial Register.	Arrears of Calls: Colonial Register.	Number of Shares forfeited: Colonial Register.	Number of Shareholders on Colonial Register.	Number of Men employe in Colony.	Quantity and Value of Gold or Silver produced since Registration.		Total Expenditure since Registration.	Total Amount of Dividends paid in Colony.
											Quantity.	Value.		
AUCKLAND DISTRICT.														
		£	£	£		£ s. d.	£ s. d.				Oz.	£	£	£
Waihi Gold-mining Co. (Ltd.)	7/12/87	320,000	13,354	53,333	9,440	1 0 0	..	..	75	570	..	892,856	670,029	16,150
Waitekauri Gold-mining Co. (Ltd.)	6/5/95	206,500	3,441	30,000	12,962 409	1 0 0 0 7 6	..	..	80	350	..	183,190	258,869	2,677
New Moanataiari Gold-mining Co. (Ltd.)	5/10/99	130,723	3,328	..	25,188	0 18 0	690 9 0	..	182	60	980	2,605	4,189	..
May Queen-Hauraki (Ltd.)	2/7/96	240,000	19,753	125,500	94,500	1 0 0	..	..	503	50	5,282	14,355	35,129	..
Monowai Gold-mines (Ltd.)	12/10/96	25,000	..	75,000	73,347	1 0 0	..	..	139	40	..	452	18,802	..
Hauraki South Gold-mining Co. (Ltd.)	20/11/96	71,577	..	50,000	14,685	1 0 0	..	..	77	Tributers	97	301	7,591	..
Ohinemuri Syndicate (Ltd.)	4/3/96	51,918	2,253	38,000	20,253	1 0 0	..	..	315	13	..	..	22,547	..
Union-Waihi Gold-mining Co. (Ltd.)	20/11/95	141,250	515	100,000	605	0 15 0	..	..	32	35	..	..	46,731	..
New Zealand Crown Mines Co. (Ltd.)	27/6/96	200,000	..	100,000	25,666	1 0 0	..	..	100	230	Gold, 39,342 Silver, 34,766	171,650	198,553	652
Waihi-Silverton Gold-mines (Ltd.)	28/6/98	67,764	..	55,811	17,843	1 0 0	..	..	107	120	8,968	17,768	31,666	..
Kuranui-Caledonian Gold-mining Co. (Ltd.)	13/8/96	40,385	..	109,615	44,374	..	..	..	171	45	4,472	12,037	23,649	..
New Zealand Jubilee Gold-mine (Ltd.)	14/5/97	100,000	..	75,000	..	..	..	..	..	40	..	69	..	..
Waihi Grand Junction Gold-mining Co. (Ltd.)	19/4/98	150,000	2,113	112,500	6,583	1 0 0	147 3 0	..	20	60	..	..	23,810	..
Totals	..	1,745,117	44,757	924,759	345,855	..	837 12 0	..	1,801	1,613	93,907	1,295,283	1,341,565	19,479
NELSON DISTRICT (INCLUDING WEST COAST).														
New Inkerman Mines (Ltd.)	—/7/98	..	..	..	..	..	..	..	..	32	..	..	12,495	..
Totals	..	..	..	..	..	..	..	..	..	32	..	..	12,495	..

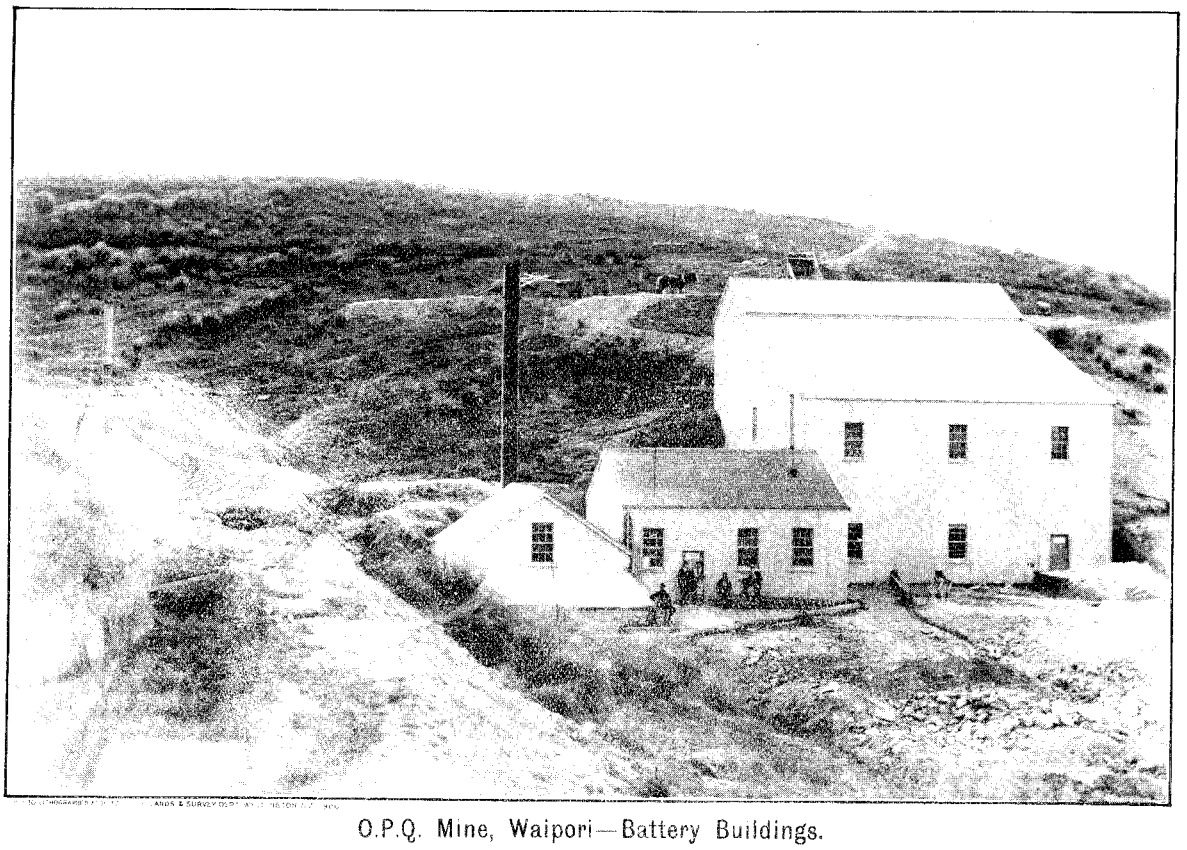
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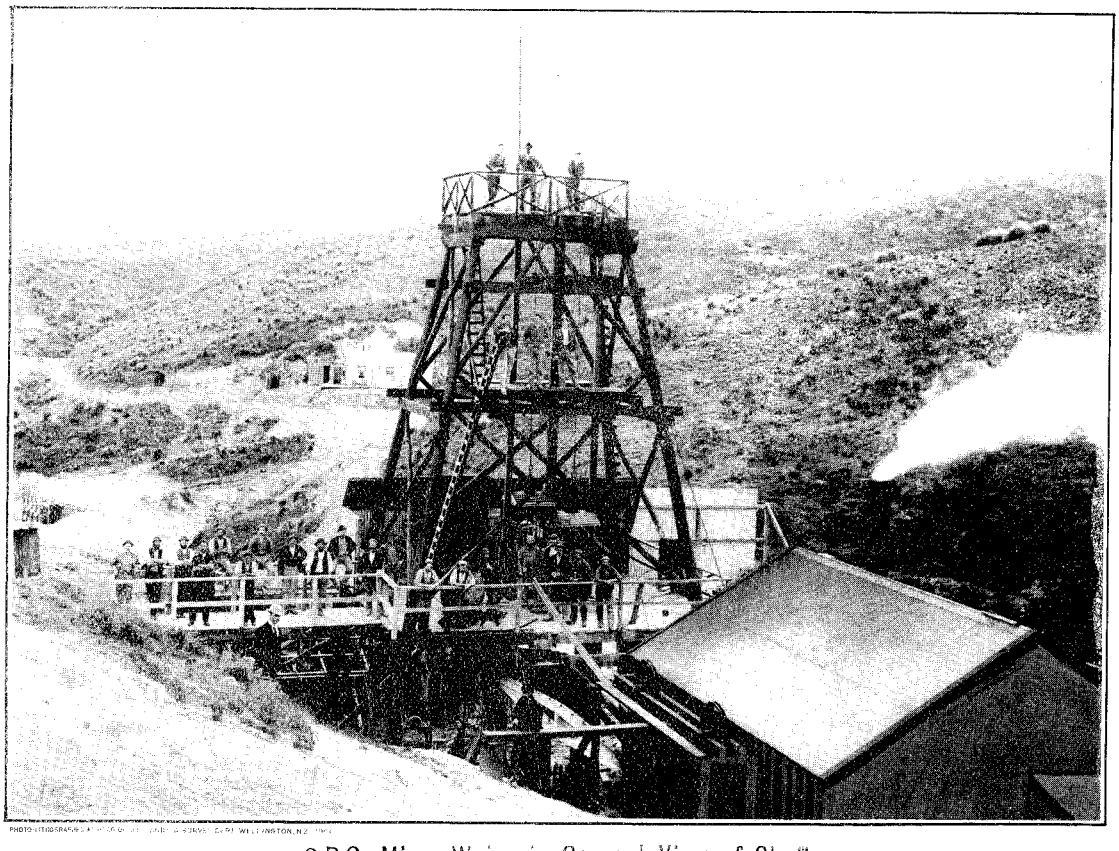
Price 4s.]



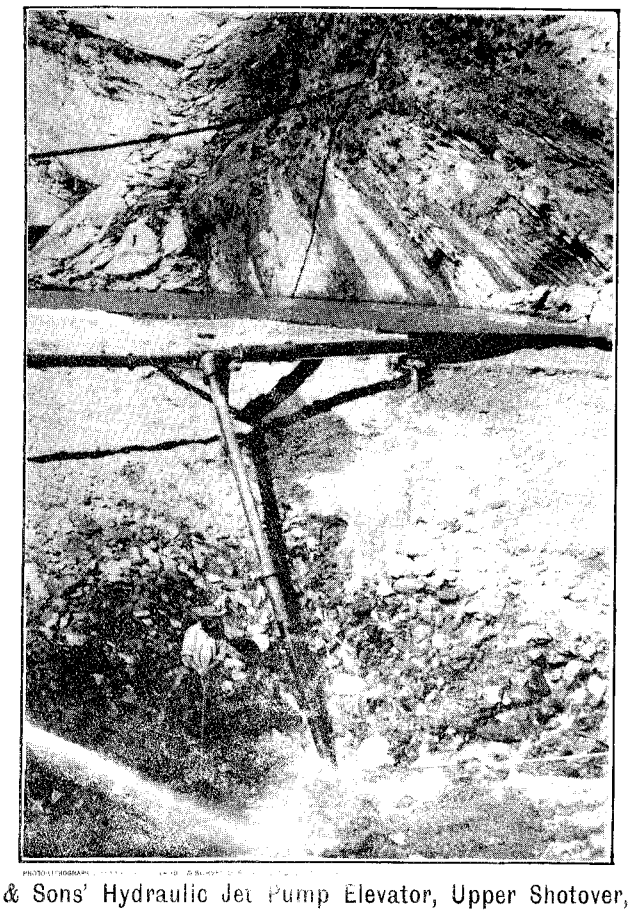
Kaitangata Colliery, looking South.



O.P.Q. Mine, Waipori—Battery Buildings.



O.P.Q. Mine, Waipori—General View of Shaft.



Smith & Sons' Hydraulic Jet Pump Elevator, Upper Shotover, Otago.

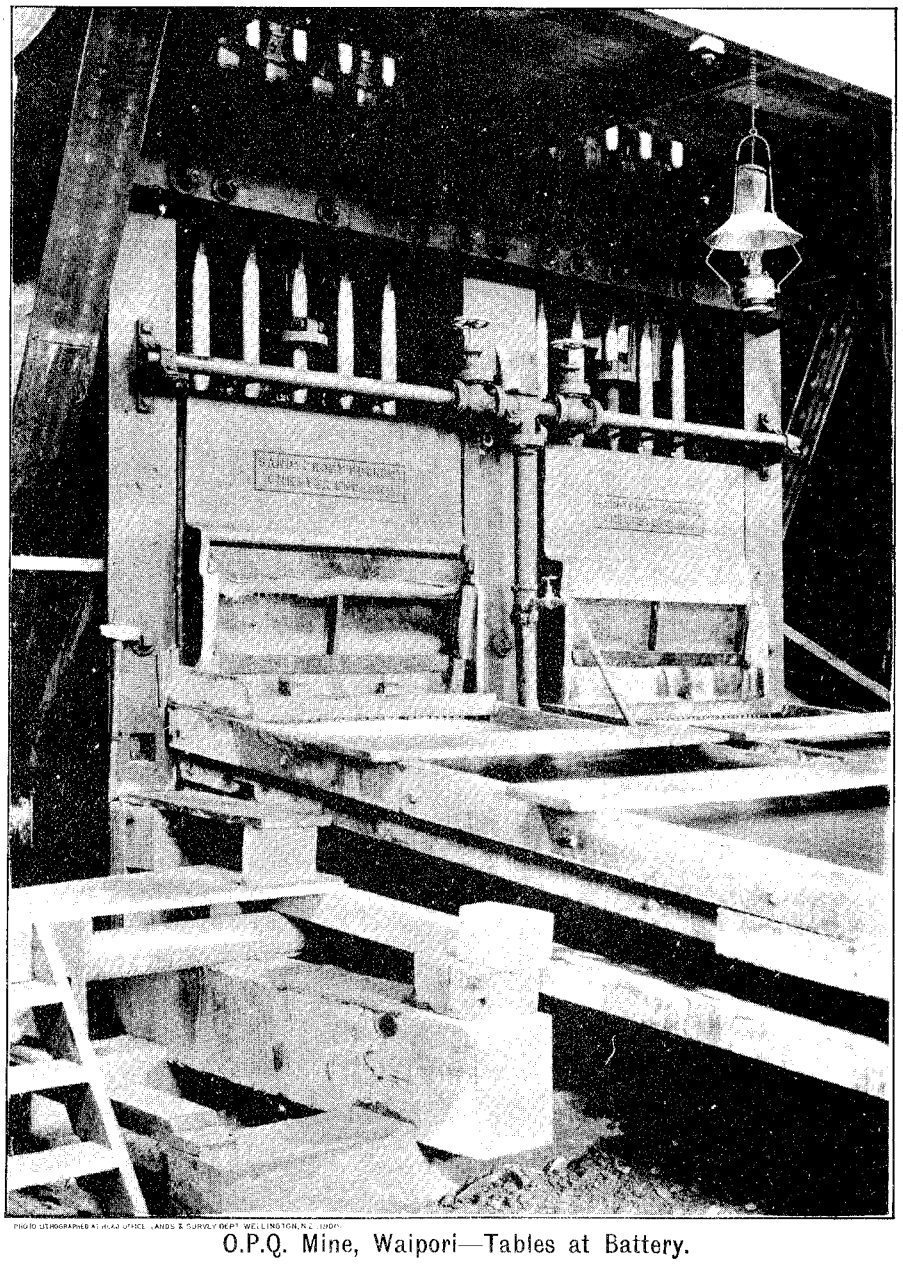


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O.P.Q. Mine, Waipori—Tables at Battery.