1904.

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.

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*See also reports of Wardens.

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

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

SIR,— Mines Department, Wellington, 15th June, 1904.

I have the honour to submit my report, together with those of Inspectors of Mines, Wardens, and other officers of this Department, for the year ending the 31st December, 1903.

The tables showing expenditure through the Mines Department on roads, bridges, tracks, prospecting operations, &c., are, as usual, for the period covered by the financial year—viz., from the 1st April, 1903, to the 31st March, 1904.

SUBSIDISED ROADS AND TRACKS.

The expenditure (as subsidies) and the liabilities on outstanding authorities for the year ending the 31st March, 1904, are as follows:—

Name of Local Body.	Expenditure for the Year ending 31st March, 1904.	Liabilities on Authorities on 31st March, 1904.
	£ s. d.	£ s. d.
Thames County	100 0 0	...
Piako County	75 0 0	...
Collingwood County	4 10 1	...
Grey County	100 0 0	...
Knapdale Road Board	50 0 0	...
Contingencies	136 16 8	...
Totals	466 6 9	...

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, 1904 :—

Name of Local Body.	Expenditure for the Year ending 31st March, 1904.	Liabilities on Authorities on 31st March, 1904.
	£ s. d.	£ s. d.
Coromandel County	5,011 4 3	3,422 4 6
Thames County	2,572 5 6	2,400 9 7
Thames Borough	...	200 0 0
Ohinemuri County	2,889 12 7	2,355 16 2
Tauranga County	187 0 0	...
Pelorus Road Board	248 16 6	170 0 0
Collingwood County	2,160 15 7	1,123 0 11
Waimea County	903 19 6	780 6 2
Buller County	6,300 0 0	3,450 0 0
Inangahua County	1,540 14 7	1,984 5 5
Grey County	2,531 0 0	345 0 0
Brunner Borough	177 1 3	122 18 9
Westland County	2,051 1 3	510 9 0
Hokitika Borough	100 0 0	...
Bruce County	22 5 0	...
Tuapeka County	1,750 18 8	589 1 4
Vincent County	1,590 10 0	1,359 10 0
Lake County	1,866 8 0	318 9 0
Southland County	1,300 0 0	...
Knapdale Road Board	150 0 0	...
Wallace County	55 8 3	44 11 9
Roads Department	6,016 11 2	3,311 2 4
Public Works Department	5,702 4 3	887 18 1
Totals	45,127 16 4	23,375 3 0

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, 1904.	Liabilities on Authorities on 31st March, 1904.
	£ s. d.	£ s. d.
Coromandel	250 5 0	148 5 0
Thames	304 0 0	766 9 4
Ohinemuri	23 0 0	135 10 0
Buller	35 10 0	35 10 0
Inangahua	32 19 0	168 12 6
Westland	383 16 9	110 9 3
Tuapeka	9 6 6	15 13 6
Totals	1,038 17 3	1,380 9 7

THE GOLD-MINING INDUSTRY.

I have to report a further increase in the amount and value of gold exported from the colony, notwithstanding several drawbacks to which the industry has been subjected. Several mines in various parts of both Islands which were formerly consistent producers of gold have now ceased to occupy that position, some being closed down altogether. Dredging and hydraulic mining in Central Otago were also seriously interfered with owing to severe frosts and floods, and thus a shortage has resulted in the production of gold from that district. Other districts, however, all show increases, which have the effect of raising the value of gold exported for the year ending the 31st December, 1903, to £2,037,831, this being £86,398 in excess of the export value of the preceding twelve months.

The total value of gold exported from the year 1857 to the end of last year (1903) amounts to £63,149,147.

The several branches of the industry in the various districts are referred to under their several headings.

PRODUCTION OF GOLD.

The following comparative statements show the quantity and value of gold entered for exportation for the last two calendar and financial years:—

Name of District.	Year ended 31st December, 1902.		Year ended 31st December, 1903.		Increase for 1903.	Decrease for 1903.
	Quantity.	Value.	Quantity.	Value.		
	Oz.	£	Oz.	£	Oz.	Oz.
Auckland ...	201,583	721,977	232,681	832,334	31,098	...
Marlborough ...	601	2,404	972	3,845	371	...
Nelson	5,947	23,649	7,962	31,710	2,015	...
West Coast ...	118,796	475,272	125,241	501,090	6,445	...
Otago	181,116	728,124	166,458	668,852	...	14,658
Canterbury ...	2	7	...	...	...	2
Totals ...	508,045	1,951,433	533,314	2,037,831	25,269*	...

Name of District.	Year ended 31st March, 1903.		Year ended 31st March, 1904.		Increase for 1904.	Decrease for 1904.
	Quantity.	Value.	Quantity.	Value.		
	Oz.	£	Oz.	£	Oz.	Oz.
Auckland ...	203,158	724,892	233,271	834,070	30,113	...
Marlborough ...	401	1,604	1,279	5,073	878	...
Nelson	6,235	24,704	8,222	32,819	1,987	...
West Coast ...	125,399	501,639	126,184	504,845	785	...
Otago	155,056	623,213	171,489	690,141	16,433	...
Canterbury ...	...	...	...	...	...	...
Totals ...	490,249	1,876,052	540,445	2,066,948	50,196†	...

* Total net increase, value £86,398. † Total net increase, value £190,896.

QUARTZ-MINING.

North Island.

The Waihi Gold-mining Company's properties rank not only as the largest and most important of their class in this colony, but take a place among the principal gold-mines of the world. During last year the tonnage of quartz raised and treated amounted to 214,508 tons (or 35,023 tons more than that of the previous year), having a total value of £603,167 8s. 9d., and an average value of £2 16s. 3·2d. per ton.

Extensive additions to plant, some of which were outlined in the last annual report, have been made during the year. Among these, the large pumping-engine and pumps—the latter being 24 in. in diameter by 12 ft. stroke—is a notable feature. One of the shafts has been deepened to a lower level, and a considerable amount of development-work done underground in the various sections of the property. The reef-system is well opened up and ore-bodies proved, which will afford employment to a large number of persons for many years to come.

The method of filling the stopes with mullock which is practised at Waihi might be more generally adopted at other mines in the colony—modified, of course, to some extent to suit local conditions—with advantage to employers and employed. There is a sense of security in working in and travelling through well-filled stopes, which is absent in the case of stoped ground left open except for the timber supports, or only partially filled in. The system also effects considerable economy in timbering, and the ventilation is more easily kept up to the actual faces of work. In the case of mines worked by shafts, it is desirable that some provision should be made to prevent the possibility of the pumps becoming choked with mud from the filled-in stopes in the event of any occurrence which would cause the mine to become flooded.

At the several batteries and reduction-works belonging to the Waihi Gold-mining Company improvements in and extensions to the plant have been made, among which may be mentioned a new plant for the treatment of concentrates, which hitherto have been shipped to New South Wales.

The average number of persons employed by the company during the year was 1,120, and a quarter of a million sterling was paid in dividends. Altogether the sums paid in dividends since the commencement of operations amount to £1,257,189 17s. 6d.

I have to acknowledge the courtesy of the management in furnishing, through Mr. J. Coutts, Inspector of Mines, several interesting photographs illustrative of the company's operations, for reproduction in this report.

The Waihi Grand Junction Mine has not yet entered the lists as a producer of gold. Nevertheless, a considerable amount of important work was undertaken during the year, the results of which are held to justify the owners in sinking to a deeper level and erecting a modern battery of forty stamps with accessory concentrating and cyanide plants. It may therefore be confidently expected that the yield of bullion at Waihi may be augmented from this mine in the near future.

Boring operations, with the object of proving reefs, have been undertaken by some of the companies holding claims in this locality, but, with the exception of those of the Waihi Grand Junction Gold-mining Company, no practical results had been attained up to the end of the year. The success of this latter company's boring has, however, stimulated the holders of neighbouring properties to persevere in their efforts to discover quartz reefs on their claims.

At Karangahake the New Zealand Crown Mines and the Talisman Consolidated Mines have worked steadily throughout the year, and the Woodstock Mine during the early part of the year only. The value of bullion obtained and average number of persons employed is summarised as follows :—

	Bullion-value. £ s. d.	Average Number of Persons employed.
New Zealand Crown Mines	78,279 12 1	242
Talisman Consolidated Mines	94,134 7 11	170
Woodstock Mine	9,680 12 1	40
Totals	£182,094 12 1	452

Extensions, having for their object the further opening-out of the reefs at the lower levels, have been undertaken in connection with the incline shaft at the New Zealand Crown Mines. A large area of ground is opened up in this property, but a considerable proportion of the ore mined and treated during the year was somewhat below the average value. Development-work has been pushed ahead at the Talisman Consolidated Mines, and successful returns obtained. Generally, the outlook for these properties may be said to be of an encouraging character. The Woodstock Mine does not stand in so favourable a light, the ore-values being considerably lower than those obtained at either of the adjoining mines. It is possible, however, that, worked in conjunction with and as a part of one of the adjoining properties, payable results may be obtained, when such might be out of the question by running this mine as an independent concern owing to the expenses necessarily incurred in working as a separate property.

At Waitekauri work has been chiefly of a prospecting character. Although the experience of the Waitekauri Gold-mining Company has for the past two or three years been of a disappointing character, it is to be remembered that the shareholders have received upwards of £83,000 in dividends, and that results of this nature are such as should encourage the company to persevere in their search for productive lodes.

The Komata Reefs Mine continues to be a steady producer of bullion, the battery-returns for the year showing a value of £37,110 2s. 9d. from 14,780 tons. This gives an average value of £2 10s. 2·6d. per ton. The future prospects of this mine are considered to be of an encouraging nature.

Mining in the neighbourhood of Te Aroha is practically confined to Mr. Hardy's operations at Waiorongomai. The battery plant is for its size very complete, and every care is taken to obtain the best results from the treatment of the ores. During the year bullion to the value of £4,972 18s. 2d. was obtained from 1,561 tons of ore, the average value being £3 3s. 8½d. per ton. When I visited this district in November last negotiations were being entered into for the formation of a company to take over Mr. Hardy's property. It is intended to raise sufficient capital to develop the property on a much more extensive scale than Mr. Hardy has been able to do single-handed. If values such as those referred to above can be depended on it would appear that the mine is well worth working on such lines as proposed, especially as a much lower level can be gained than the present workings without the necessity for shaft-sinking and pumping.

At Tairua Broken Hills mining has been very energetically carried out at the property under the direction of Mr. H. H. Adams. The mine has earned a reputation for being one of the consistent producers of bullion, is a dividend-paying concern, and evidently has a very fair future before it. During the year 6,355 tons of quartz yielded a return valued at £21,146 18s. 8d., the average value being £3 6s. 6¾d. per ton.

In addition to the work at the mine just referred to, there is a little desultory mining carried on in the locality.

The prospecting-work at Neavesville, referred to in last year's report, has evidently satisfied the claim-holders. When I visited the district at the latter end of the year a new low-level tunnel had been commenced, and work was in hand for the equipment of an aerial tramway and the erection of a battery of thirty stamps, with concentrating and cyanide plants.

At Te Puke some fairly extensive prospecting-work was being carried out in the early part of the year under the direction of Messrs. Bewick, Moreing, and Co., who hold an option over the property.

In actual mining-work there is little or no change of note to report as regards Thames, but during the year considerable attention has been given to the question of boring to prove the existence or otherwise of auriferous lodes at greater depth than has hitherto been worked. It may be mentioned that the working of the several mines at Thames has demonstrated that there are defined lines of demarcation between profitable and unprofitable ground. From a section by Mr. James Park, published in 1897, an upper zone of poor country is shown to have been passed through in the Waiotahi shaft just above No. 1 level, slightly below No. 3 level in the New Prince Imperial shaft, between Nos. 2 and 3 levels in the Saxon shaft, and a little above No. 7 level in the Queen of Beauty shaft. Below this the section shows what is described as a "very rich zone," which averages about 330 ft. in vertical depth and rests on the top of a lower poor zone.

C. 3

KAPANGA MAIN SHAFT

HODGE'S SHAFT

SEA LEVEL

A

B

290'

250'

400'

700'

800'

940'

1000'

Crosscut. Approx length to Tokatea Big Reef 3550'

From Hodge's Shaft 2600'

960'

1500'

2000'

2500'

3050'

5000' from Surface.

4000' from Surface.

KAPANGA

SCOTTY'S

BRITANNIA

GOOD LUCK

GOLDEN SPARK

HARBOR VIEW

1300'

1350'

(1550)

1000'

550'

1300'

2200'

TOKATEA REEF

1400' B.I.G.

3550'

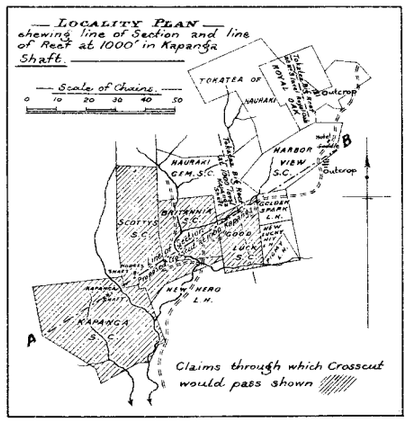
	Approx: Length on Line of Reef	Approx: Height of Backs on Dip.
	Feet	Feet
In Kapanga S.C.	1800	2950.
" Scotty's "	1200	1400.
" Britannia "	1300	2200.
" Good Luck "	900	1350.

At a depth of 1000' a Crosscut from Kapanga Main Shaft would traverse

Kapanga S.C.	600 Feet.
Scotty's " "	1000 "
Britannia " "	1550 "
Good Luck "	400 "
Total distance to Reef	3550 "

LOCALITY PLAN shewing line of Section and line of Reef at 1000' in Kapanga Shaft.

Scale of Chains. 0 10 20 30 40 50



— SECTION —
— SHOWING PROPOSED CROSSCUT —
— FROM KAPANGA SHAFT AT —
— 1000 FT LEVEL. —

Scale of Feet.

0 500 1000.

2250.7'04.541

This latter appears to be of considerable depth (about 400 ft.) between the Shotover shaft and the Big Pump shaft; but is estimated at, approximately, 140 ft. at the Prince Imperial shaft. According to the section, the Big Pump shaft was sunk through this poor zone and into what is considered productive ground below; but as the pumping-level is above the base of this poor zone there are at present no facilities for proving that the shaft has really penetrated payable ground. Boring has been resorted to in order to ascertain the existence or otherwise of payable reefs below the lower zone of poor country, but so far the work done has not been sufficient to satisfactorily settle the question one way or the other.

The Waiotahi Mine (Thames), although not a large mine, is a consistent gold-producer and dividend-paying property; some other claims and sections of mines are worked on tribute, whilst a few holders of small claims continue to add a little to the gold-output of the district. The most comprehensive mining-work undertaken at Thames during the year has been the extension of the Moanatairi tunnel towards the Alburnia claim. This will prove a considerable area of ground below the hill country, as the Moanatairi tunnel is some 600 ft. below the bottom of the New Alburnia shaft, the latter being 500 ft. deep. It will therefore be seen that the work now in progress will effectively prospect the ground to a depth of fully 1,100 ft. below the crown of the hills, and in the event of payable quartz being met with will enable mining to be done at a fairly cheap rate owing to the absence of any necessity for winding and pumping appliances for some years to come.

The Tararu Creek Mine is still idle, and the Monowai Mine at Waiomo has closed down owing to the difficulty of successfully dealing with the ore, which is of a very refractory nature.

At Tapu the Mahara Royal Mine appears to have entered upon a new lease of life. A new adit has been driven from the level of the battery and has cut the reef. This is stated to fork outwards towards the surface into four branches, all of which are expected to join at depth, two having already been found to have done so. As some of these branches are of considerable width, there appears every probability of a large reef at a lower level which may be worked economically. For the purpose of exploiting this, the winding plant formerly used at the Golden Point Mine, Tapu, has been purchased. The gold from the reef here is easily saved by amalgamation, and the concentrates by means of a Wilfley table. The crushings during the year gave a value of £1 14s. 2d. per ton in gold obtained by amalgamation. I have no information as to the value of the concentrates. The sands are said to be worth only 4s. per ton, and are therefore not considered rich enough to warrant treatment by cyanide. A company has recently been formed to work ground at Tapu explored by Mr. D. Sheridan. This company will be known as the Sheridan Gold-mining Company. Operations were commenced by the company in November. The working of the two properties named appears to give some hope as to the future possibilities of the Tapu locality.

At Coromandel some very favourable returns have been obtained from the Hauraki and the Bunker's Hill Mines. At my last visit to this district work was in progress at the surface levels of the Hauraki Mine by tributers, and by the company's men at the 160 ft. level, principally on blocks of quartz previously left. The mine had been unwatered (after the recent stoppage of operations) down to the 220 ft. level, but the shaft is about 400 ft. deep altogether, and comparatively little work appears to have been done at the lowest level. It is thought that when the water is pumped out and work resumed at the lower levels there should be a good future for this property.

The Bunker's Hill Mine adjoins the Hauraki Mine, the pumping for both mines being done under a mutual agreement at the Hauraki shaft. By arrangement, a certain amount of work is being done in the area of the Hauraki Freeholds Company. I was informed that there is a possibility of operations being resumed by the last-named company.

Some small properties are being worked between the Upper Township and the crown of the Tokatea Hill. Excellent picked stone has been obtained at the Harbour View Mine. At the Golden Spark Mine adjoining, the work done in cutting the lode by a level tunnel has placed this property in a position which would appear to fully warrant expectations of the mine becoming a gold-producer at an early date. Prospecting operations are also in progress in different places on the Coromandel side of Tokatea Hill.

A large outcrop of quartz, locally known as the "Big Blow" is to be seen on the road leading from Coromandel Upper Township to the top of Tokatea Hill. This outcrop extends on the line of strike for a considerable distance, and is spoken of by Mr. Francis Hodge, M.E., as the "mother-reef" of the district. Mr. Hodge thinks that, notwithstanding the admittedly low grade of ore contained in this "Big Blow" at the outcrop, it will be found to increase in value at greater depth, and suggests that it should be systematically tested by a series of diamond bores. He has kindly furnished me with a drawing for reproduction showing how the reef could be won from the Kapanga shaft at depths of 1,000 ft., 1,500 ft., and 2,000 ft. respectively, also the various claims at present held in which the large reef is considered to exist. In explanation of this drawing, Mr. Hodge writes as follows:—

"I beg to hand you a report in support of the transverse section (with locality-plan) showing proposed crosscuts from Kapanga shaft. The transverse section gives the depths at which diamond bores may be conducted, and likewise crosscuts from the Kapanga line of main shaft to cut the Tokatea Big Reef. From the locality-plan it can be seen at a glance that the belt on the line of section has been proved in passing various claims to be rich in developing various reefs outside of the Tokatea Big Reef. In the upper tufaceous sandstone gold-bearing rocks I estimate (from eighteen years' experience of the Coromandel Goldfield) that the Tokatea Big Reef is the mother of a permanent reef traversing the Coromandel Goldfield, which is running a few degrees south-east and west of north. It is a well-known fact that this Tokatea Big Reef is not payable down to the datum-line of sea-level. In width it varies from 20 ft. to 60 ft. It is assumed by many that this Big Reef would in depth be proved to contain highly payable gold-ore, and the most economical method of testing the accuracy or otherwise of this theory would be by diamond bores.

"A line drawn from the Union Beach, or Coromandel Harbour at sea-level, to the Tokatea or Royal Oak Mine passes principally through tufaceous sandstones, diorite porphyry, compact felsite, very finely grained and hard and soft bands of calcareous slates with calcite veins.

"The dip of the Big Reef and the dip of the auriferous rocks, as far as developments have been prosecuted, seem to be in the same direction—namely, south-westerly. This being so, augurs well for the Tokatea Big Reef (and mother-reef, so-called) for permanency in depth.

"I may say that during my experiences I have met representatives of large syndicates, who were eagerly disposed to develop the Big Reef with deep-level mining. Finding the reef too poor to work on the surface series, and owing to the complications of having to work through various companies' and claimholders' areas, the proposal was abandoned, as it would not pay to sink shafts and open up levels, support drainage, winding, &c., for a limited area of ground. The necessity of a large holding for the purpose of developing this reef is therefore apparent.

"It is my opinion—based on the fact that the Big Reef traverses the country for miles (see locality-plan) towards Cape Colville (north) and to the Thames (south)—that if once proved by diamond boring to be payable, the reef would ultimately be permanently developed on a large scale, thus making the Coromandel Goldfield to equal any yet discovered in any part of the world.

"In South African gold-mines and in Australia borings have been carried out at depths from 3,000 ft. to 4,000 ft. Diamond boring is only just being initiated in New Zealand on a small scale as yet, but so far is fairly satisfactory, and I feel persuaded that if it is persevered in throughout the colony it will prove that New Zealand is very rich in gold-ores, especially at great depths."

In connection with this subject, I would also draw attention to a paper on "The Igneous Character of the Carboniferous Rocks of the Tokatea Goldfield, Cape Colville Peninsula," by Mr. Alexander McKay, F.G.S., Government Geologist, read before the Australasian Institute of Mining Engineers at the annual meeting held in Auckland in January, 1903 ("Transactions of the Australasian Institute of Mining Engineers," Vol. ix., Part ii.). This is reprinted with this report, appearing at the end of notes on quartz-mining in the Northern District.

The Royal Oak of Hauraki Mine had a better year during 1903 than was the case in 1902. Work was carried on by the company on a lode not hitherto worked (cut from No. 6. level), and good hopes are entertained as to its permanence. Tributers have been employed in taking out blocks of stone in other parts of the mine. In common with other parts of the Coromandel field, the quality of the ore is patchy, and "specimen stone" is eagerly looked for.

At the new Four-in-hand Mine, near Kennedy Bay, a new crosscut tunnel has been commenced at a considerably lower level than the Tainui level (above Waikoromiko Creek and on the opposite side of the hill from the battery) which is expected to intersect the Tainui reef at a distance of 480 ft. It is calculated that the Four-in-hand reef will be cut at 1,080 ft., and the tunnel will, if continued 660 ft. further, come through the hill near the battery considerably below the No. 4 level in the Four-in-hand reef. The total length of the tunnel will thus be 1,740 ft., and it will command a considerable height of backs in both reefs. When visiting this mine I noticed that the country rock through which the new crosscut is being driven is of a different character to the andesite at the higher levels, and, as the crosscut will intersect ground which does not appear to have yet been proved, the results of the undertaking will be looked forward to with interest.

Sundry small claims are being worked in the locality, which afford employment to a somewhat limited number of men.

In the locality of Kuaotunu the Waitaia Mine is at present the only gold-producer. The mine has been steadily worked, employing twenty-four men, the value of the stone averaging £4 4s. 8d. per ton. Tunnel-driving and prospecting have been carried on during the year at other properties in the neighbourhood.

Work on a limited scale has been done at the mines near Gumtown, the average value of the stone at the different mines varying from £1 19s. 7d. to £5 15s. 2d. per ton. The three small mines crushed in the aggregate 634½ tons for a bullion-value of £2,440 3s., representing a general average value of £3 16s. 11d. per ton.

Prospecting at the Sunbeam Mine on Great Barrier Island has evidently been satisfactory, as the owners have purchased a battery for work there.

In various parts of the Northern District there are several mining properties which, taken as a whole, afford employment to a considerable number of men, and good work of an exploratory character is often done by the miners employed.

The report of Mr. Coutts, Inspector of Mines, gives valuable information as to these holdings.

*The Igneous Character of the Carboniferous Rocks of the Tokatea Goldfield, Cape Colville Peninsula.**

[By Alexander McKay, F.G.S., Government Geologist.]

On the Hauraki Goldfields, within the limits of Cape Colville Peninsula, the Palæozoic rocks are confined to the district north of a line drawn from Mercury Bay, on the east coast, to Rocky Point, on the shore of the Firth of Thames. South of Kennedy's Bay they are developed on the east coast only at Kuaotunu, at which place gold-mining is carried on in sandstones and slates of this age. Between Tapu Creek and Coromandel there is, along and adjacent to the shore of the gulf, a very considerable development of Palæozoic and in part of Trias rocks, and between the Tiki Stream and the northern end of the Tokatea Hill, along the western slope of the main range, lies the special area of the Palæozoic or Carboniferous rocks that have more particularly to be dealt with in this paper. The same formation has a large development between Cabbage Bay and the northern slopes of Moehau, and appears to the water-marge on both sides of this part of the peninsula.

* Paper read before the Australasian Institute of Mining Engineers at the annual meeting, held in Auckland, in January, 1903: "Transactions of the Australasian Institute of Mining Engineers," Vol. ix., Part ii.

In this part they are of special interest as having, on the west spur of Moehau, a considerable variety of dyke rocks intruded into the sedimentaries, the interest in which is increased by the fact that these dykes themselves are of Palæozoic age, and correspond to the dykes that are so abundant in the Tokatea-Tiki area. It is this Tokatea-Tiki area as a goldfield, and its rocks as distinguished from later volcanic products on other parts of the peninsula, that more particularly have to be described in order that the object and meaning of this paper be made clear.

Subsequent to the discovery of gold at the Thames, through a long series of years up till the present time, various surveys and examinations of the Thames, Coromandel, Karangahake, Waihi, Waitekauri, and Te Aroha mining districts have been made, and, from the various reports that have appeared, the general impression is that the gold is chiefly and almost wholly confined to volcanic rocks of Tertiary age. Some gold-mining was carried on in slates at Tapu Creek, but scarcely with satisfactory results, and later a considerable amount of gold was obtained from reefs in slate country on Kuaotunu Peninsula; but here also within recent years the gold-yield has lessened in amount, apparently confirming the idea that the Carboniferous rocks of the peninsula do not produce gold in paying quantities, except temporarily and to a limited extent, in comparison with the yield from the auriferous andesites of Tertiary date.

Since 1869 many claims have been worked on Tokatea Saddle and Hill without, however, the owners being aware that the rocks in which mining was carried on were different to those mined in Scotty's and Kapanga Mines, and thence to Kevin's Point, at Coromandel, or that the rocks of Tokatea Hill were the same in age and belonged to the same formation as the slates and sandstones of Tapu Creek and Kuaotunu, or the felsite tuffs of Rocky Point or the gorge of Tapu Creek.

Hochstetter, when he visited Coromandel, in 1859, and examined the alluvial or slope deposits of Driving Creek, considered that the gold was derived from reefs of crystalline quartz occurring in the clay-slate formation that formed the backbone and main range of the peninsula. In 1870 Sir James Hector associated intrusions of porphyritic rocks with the slates of the main range in this part of the peninsula; but he leaves the impression that he believed the igneous intrusions were of much later date than the rocks into which they have been intruded—that they were, in fact, of the age of the volcanic outburst that accumulated the andesites of the neighbouring low grounds, and formed vast accumulations over the greater part of the peninsula, and which at that time (1870) were being most successfully mined in at the Thames. During the same year Captain Hutton, in reporting on the district adjacent to Coromandel—from the Tiki to Kennedy's Bay—states that the main range is in part composed of slates, in places described as blue arenaceous slates, weathering into soft yellowish-brown slates, on which is superimposed a thick mass of volcanic tuff and breccia, which, being the bed-rock of the gold veins and covering a large extent of country, is of far more importance than the slates.*

All the volcanic rocks were by Hutton regarded as of Tertiary age, and no mention is made of the occurrence of gold in the slates of the main range or Tokatea Hill.

In 1880 S. H. Cox, then Assistant Geologist, examined the rocks of this area between the Tiki and Tokatea Hill. At the Tiki he found that the Golden Belt had been (then abandoned) worked in slates. On Tokatea Hill he recognises the presence of a felsite dyke, but considers the rocks mined in as decomposed volcanic rock; but he is not clear in regard to what is the relationship of this volcanic rock. In 1882 he states that the rocks of Tokatea Hill and Saddle are unlike those of the Thames or elsewhere of the southern part of the peninsula, and more resemble the felsite or felsite tuff of the underlying slate formation.

In 1893 Professor Park considered the rocks on Tokatea Hill as identical with the volcanic rocks that overlie the coal at Torehine, on the coast south of Cabbage Bay, and states that the volcanic rocks are continuous between the places named. The dyke-intrusions in Palæozoic rocks at Torehine are also regarded as younger than the conglomerates at the base of the coal formation, no trace of igneous rocks being discoverable in the conglomerates, which fact is claimed to be negative evidence of great value.† At a later date, when, in 1897, he read his paper on the "Geology and Veins of the Hauraki Goldfields," he evidently had not changed the opinion held in 1893, and in spite of the free use of the term "greywacke," as applied to the felspathic sandstones of the peninsula, there is no hint that a strong development of volcanic and dyke rocks existed between the Tiki and Tokatea Hill, and it is significant of the opinions held at this date that, "although the gold-bearing andesites and succeeding volcanic rocks have been erupted through the Palæozoic basement rocks throughout the length and breadth of the peninsula, it is only at a few places that andesite dykes are seen penetrating the slaty shales."‡

In 1897, noting a great distinction between the igneous rocks of Tokatea Hill and those of the lower grounds to the west, I proposed the term "Kapanga group" for the latter, andclassed the Tokatea rocks with those of the Thames, Karangahake, Te Aroha, &c., under the term "Thames-Tokatea group"; but further researches during the following year led to the separation of the rocks of Tokatea Hill and Saddle and the west slope of the main range to the Tiki and Pukewhau Saddle, and the inclusion of the igneous rocks of this part with, and as forming part of, the Carboniferous formation.

The dyke-intrusions on the west spur and northern slope of Moehau had also to be considered, if younger than the rocks in which they appear, as being at least of Palæozoic, probably of Permian, age; but the dykes at Torehine and on the coast north of the Mata River, within Thames County, are probably rightly considered as belonging to or connected with a later volcanic outburst.

* Geol. Reports, 1870–71, p. 2. † Trans. N.Z. Inst., Vol. xxvi., p. 360. ‡ Trans. N.Z. Min. Eng., 1897, Vol. i., p. 16.

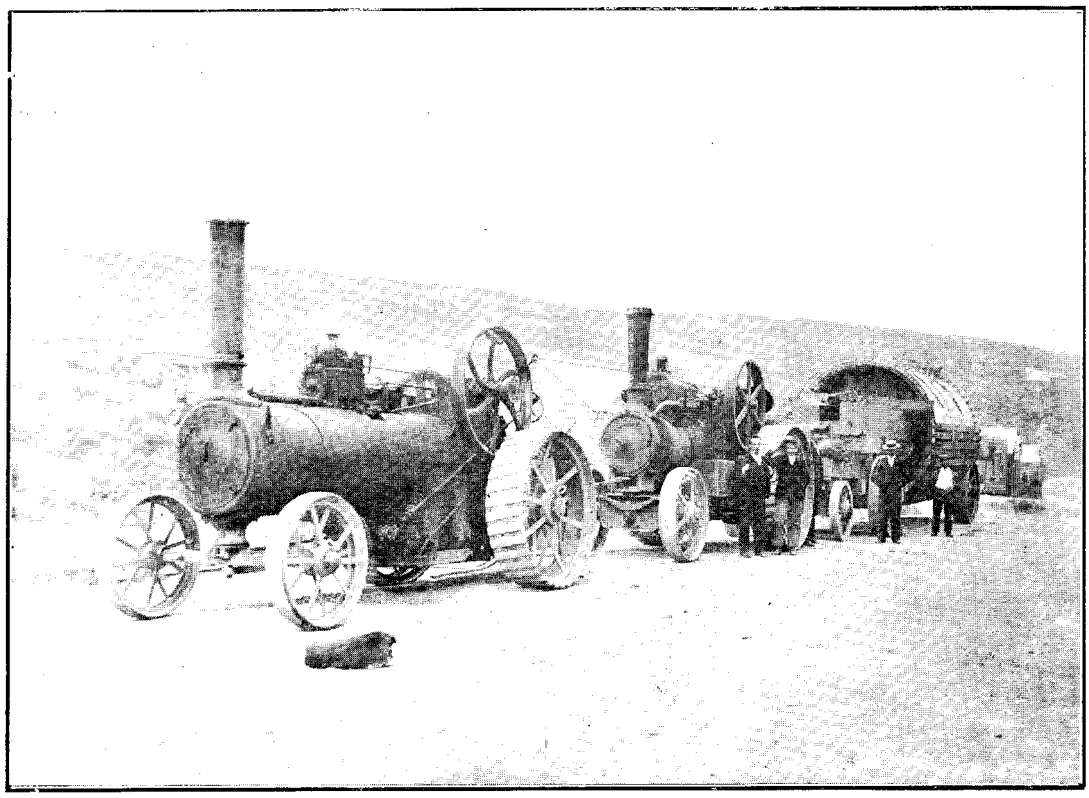
In 1899 J. Malcolm Maclaren prepared a paper, which was printed with the Mines Report for 1900. This deals with the "Geology of the Coromandel Goldfields," and consequently with the area and the rocks here considered. Maclaren traced the soda felsites of Tokatea Hill, called by him ceratophyres,* into the valley of Paul's Creek, north-west of Tokatea Hill, and describes the same rocks associated with a dyke-like mass of quartz porphyry on the east side of Tokatea Hill and Saddle, and thence similar rocks south along the west slope of the main range to the Golden Belt reef at the Tiki. With the exception of the belt of rock called quartz porphyry, Maclaren, in his section of it, does not show the existence of any dykes in Tokatea Hill, yet he was aware of the existence of that occurring in the No. 7 level of the Tokatea Mine, and which is intersected vertically under the higher part of Tokatea Hill, 1,000 ft. from the surface. Like others, he seems to regard the numerous outcrops of grey porphyritic rock on the east slope of the hill as belonging to the Tertiary volcanic rocks of the Kapanga group to the north, or of the Thames-Tokatea group as developed on the higher part of the Success Range to the south of Tokatea Saddle.

Rocks of the Carboniferous Formation, Tiki-Tokatea.—The lowest rocks, as well as those forming the upper part of the formation, are sandstones, occurring as grey, gritty, hard rocks, with dark, crumbling shales and mudstones interbedded. Nowhere within the area dealt with in this paper are the lower or higher rocks so exhibited as to be studied with advantage, and they are hardly, if at all, exposed at the surface on Tokatea Hill. In this northern part they are best seen in a small creek that lies north-east of the upper township. The rocks are thin-bedded and nearly in a horizontal position. On the road to the Success Mine similar rocks dip to the east, and on the spurs wither to a pale-yellow or buff colour. The same rocks are seen in Tiki Creek, near Frasers' Mill, where they overlie and underlie soda felsites, and form first an anticline and then a syncline as the creek is followed towards its source.

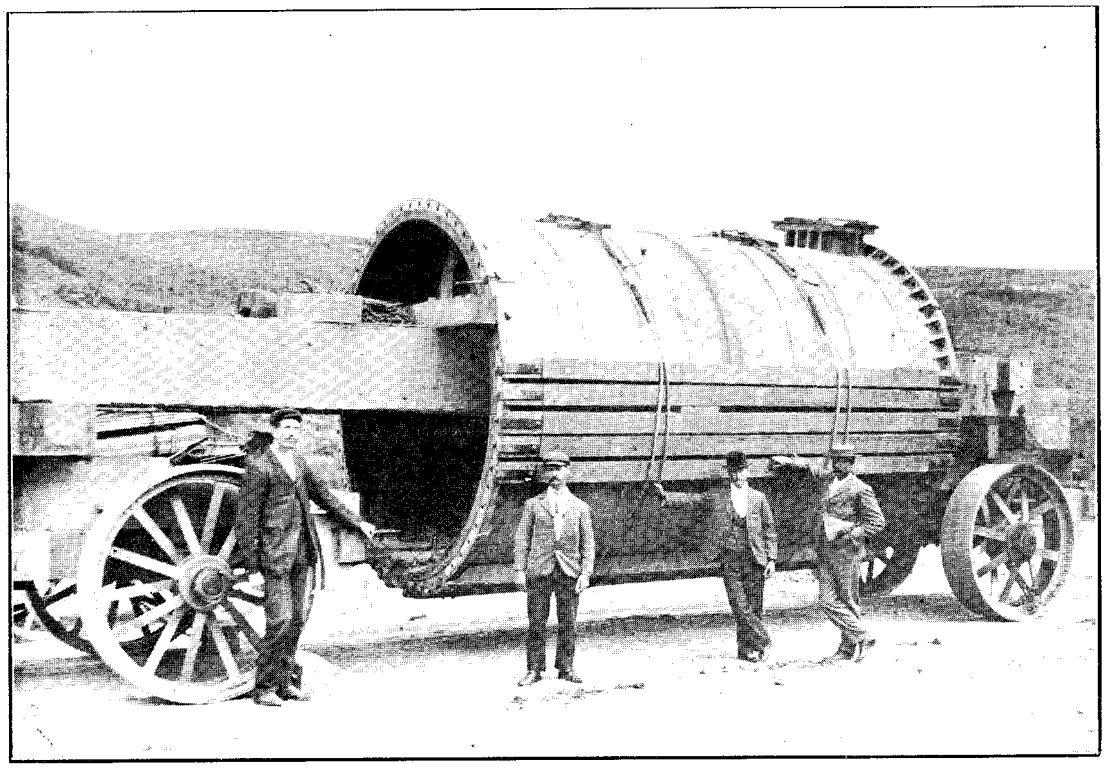
In the No. 7 level of the Tokatea Mine, which was driven west from the lower east slope of the hill, the Main Tokatea reef was cut at 2,000 ft. from the entrance, and the dark slaty beds dipping west were not reached till within some 200–300 ft. of the Big Reef. The tunnel at first, for a considerable distance, passed through what was thought to be ordinary volcanic rock, and then entered the light-grey felsitic rocks, which continued till reaching the slates forming the foot-wall of the Big Reef. It is very remarkable that apparently but one dyke was met with after entering the felsite rocks. This occurred at 1,600 ft. from the entrance to the tunnel, and is a light-grey coarsely porphyritic rock, which may be regarded as an andesite or a dacite. The crystalline rock at the entrance to the tunnel is in part the equivalent of a dark porphyritic rock that is seen in the road-cuttings to underlie the thick rib of rock described by Maclaren as a dyke of quartz porphyry. While thus at most but two dykes have been detected in the low level of the Tokatea Mine, there seem to be numerous dykes on the surface of the east slope of the hill. These are different rocks to those forming the Kapanga or Thames-Tokatea groups to the north and the south, and correspond in character to the numerous dykes met with in Cadman's and Tiki Creeks, further to the south. In the line of the low level, No. 7 tunnel, of the Tokatea Mine the Big Reef was cut 400 ft. west of the crest of the range, and about one-third of a mile to the east of it the quartz-porphyry dyke of Maclaren runs north and south parallel to the Big Reef. Between the quartz porphyry (called by me a rhyolite) and the Big Reef, with the exception mentioned, there seem to be no true slate or slaty shales, and some 1,200 ft. of the distance seems to be occupied by the soda felsites, which rise to the surface on Tokatea Saddle and nearly to the highest point of Tokatea Hill. On both sides of Tokatea Saddle the felsites are much crushed, and form breccia-beds associated with beds of greywacke, and these, with dykes or flows of more porphyritic rocks, constitute the country that carries the productive lodes and reefs of the Tokatea Goldfields.

As the productive part of the field east and west is contained between the Big Reef and the belt of rhyolite, denominated quartz porphyry by Maclaren, so also to the north it does not extend much beyond half a mile from the Tokatea Saddle, and in that direction also is bounded by a strong rib of rhyolite which, from the Kennedy's Bay Road, half a mile above the Royal Oak compressor, strikes west, or nearly at right angles to the north and south rib of rhyolite. On the Upper Waikoromiko Road the north and south rib of rhyolite slightly alters its direction, and passes under the Thames-Tokatea rocks of the higher part of the Success Range, south of which for a time no gold is found, and this is on both sides of the range the limit of the field to the south. North and south the field does not exceed one mile in length, and in an east and west direction it is less than half a mile. The north and south band of rhyolite presents various macroscopic characters in different parts of the line along which it is seen at the surface. Towards the north it is a white earthy-looking rock, with minute cavities such as effect the felsite tuffs of Rocky Point, near the Thames. At the waterfall in the tributary of the Waikoromiko, by which the road from Kennedy's Bay reaches Tokatea Saddle, it is still a light-grey rock, but is without the vesicles; and on the south side of the creek exhibits a columnar structure. Further south, on the higher part of the ridge continued from the waterfall to the Upper Waikoromiko Road, it exhibits flow structure on a gigantic scale. Again, further south it becomes a white, earthy, seemingly structureless rock, harder than in the extreme north of the line of outcrop, and here containing in places an abundance of minute bipyramids of quartz. Where it is lost sight of on the Upper Waikoromiko Road it again shows as a soft earthy rock. The under-surface of the outcrop dips to the west at an angle of 50°, and, so far as can be ascertained, it forms the underlying rock to the soda felsites, and is itself underlain by a less acid, dark, hornblende rock, the slates not being seen for some considerable distance either to the east or to the north.

* Further analysis has not confirmed Maclaren's determination of soda felsite, and it is doubtful if the term should apply.



LOW-PRESSURE CYLINDER OF NEW PUMPING ENGINE (WAIHI MINE) IN TRANSIT.



LOW-PRESSURE CYLINDER OF NEW PUMPING ENGINE (WAIHI MINE) IN TRANSIT.
DIAMETER 110″, STROKE 12′ 0″.

The rhyolites that trend east and west, and bound the productive part of the field to the north, on the south side of the belt are of a brecciated character. In what appears to be the middle part they constitute a light-coloured rock, not very hard and frequently showing well-marked flow structure. The northern part of this belt, as seen at the compressor, more than any other of these rhyolites resembles quartz porphyry. These rocks, where they were examined on the road to Kennedy's Bay, are outside the limits of the Tokatea Field, and had not called for mention but for the fact that in their western extension they form the northern boundary of the field.

Of the felsite tuff, soda felsites, or ceratophyres characteristic examples may be obtained from all the levels of the Royal Oak and Tokatea Mine from No. 7 to and including No. 3. It also outcrops on the west slope of the range on Harbour View Claim, and immediately north of the saddle. The rock is fine-grained and a yellowish-white in No. 7 tunnel. In No. 6 it has much calcite in connection with it, more especially in or adjacent to the reefs worked. In No. 5 level it is a greenish-grey rock, with minute spots of a lighter colour, and much resembles snakestone or Water-of-Ayr stone.

In No. 3 level it is a creamy-coloured, seemingly amorphous rock, much brecciated, and in Harbour View the brecciated fragments are smaller and the rock of a greenish tint. On the east side of the saddle, in the Hauraki Associated Mine, greywackes and fragmental rocks are common ; but the green, mottled felsite is also present, and dykes of crystalline porphyritic rocks. One such dyke is seen seven or eight chains from the saddle on the road to Cabbage Bay, and at least two others lie lower on the slope before reaching the first waterfall, where the road to Kennedy's Bay crosses the creek, between which and the rhyolite there are at least two other very massive outcrops of dark-grey, coarsely porphyritic rock ; and, finally, that which lies beyond or east of the north and south rib of rhyolite has also to be taken into consideration.

It would be tedious to enter on a description of the same rocks and dyke-intrusions in the middle and southern part of the Palæozoic area, which terminates on the Pukewhau Saddle and on the Matawai. Suffice to say that the felsites in Tiki Creek are identical with those on Tokatea Hill, and that in less than half a mile east and west there are nineteen massive outcrops of dyke rocks to be seen in the bed and banks of the creek.

With the exception of the Big Reef, the lodes on Tokatea Hill are not of great size, and the auriferous lodes in the space between the north and south rhyolite belt and the Big reef trend west till they make junction on the foot-wall of the Big Reef. Some of them have been very rich in gold, and have been worked continuously since the opening of the field.

The gold-bearing veins of the Tokatea Goldfield are therefore in igneous rocks, interbedded between the higher and lower parts of the carboniferous formation, and are in no way connected with the tuffs and lava-flows that carry the reefs in the low grounds to the west, from Scotty's Hill to Coromandel, or on the Thames or the goldfields of the southern part of the peninsula.

Proofs of the correctness of this statement are afforded by the unconformable relation of certain strata resting on the Carboniferous rocks on the Pukewhau Saddle and in the Waiau Valley, which unconformable rocks, of probable Triassic age, contain the proceeds of denudation affecting the Tiki Creek and Tokatea rocks. Apparently Maclaren did not note the great number of dykes that are to be seen in the valleys of Cadman's and Tiki Creeks, and when he does refer to them he thinks they belong to the Beeson's Island group of Miocene age. Yet in the paper above mentioned he says, "Further evidence of the existence of contemporaneous volcanic outbursts are supplied by the interbedded ancient lava-flows of the Tiki Creek, the Tokatea Hill, and Koputanaiki Creek. In the Tiki Creek they are seen to be both overlain and underlain by black, slaty shales, and to have a dip corresponding with that of the shales."

Maclaren made microscopic sections of some sandstones obtained from a little north of where Mill Creek crosses the Thames–Coromandel Road, and demonstrated the fact that these sandstones are largely formed of material derived from pre-existing volcanic rocks ; but he does not show that the rocks at Mill Creek are unconformable to those of Tiki Creek or Tokatea Hill, a relationship which I have shown does exist, evidences of which are to be seen on the Pukewhau Saddle and on the Mercury Bay Road, in the Waiau Valley, also in the cuttings of the Thames–Coromandel Road on the south slope of the range between Coromandel and Manaia Harbours.

Mr. Maclaren directed my attention to the crystalline material of the sandstones near Mill Creek, and subsequently I satisfied myself that the red shales, &c., of the Pukewhau Saddle were stratigraphically unconformable to the Carboniferous beds of the Pukewhau and Tiki Creeks. Later in the season I discovered the conglomerates exposed in the road-cuttings on the descent, from the north, to Manaia, and in these I found pebbles, up to 1½ in. diameter, of various of the dyke rocks of Tiki Creek and Tokatea Hill, and rhyolites resembling those of Tokatea Saddle, and practically identical with the rhyolites further on the road to Kennedy's Bay, and at the Royal Oak Compressor, further to the north-east on the same road. There could be no doubt that these conglomerates were at least of Triassic age, and some fossil fragments confirmed me in the belief that this was the actual age of the beds.

How far these conglomerates may represent material derived from the diorite and dacite dykes in the west spur of Moehau may be uncertain, but from the correspondence of many of the rocks from Moehau with the Post-carboniferous, yet Palæozoic, dykes of Tokatea Hill, Cadman's and the Tiki Creeks, it is reasonable to suppose that all were intruded at the same time or during the same period.

It but remains to say that the yield from the Tokatea Goldfield, which I cannot state in ounces, has been a large amount, and that in this instance it has proved that mining was profitably carried on in the Palæozoic rocks of the Hauraki Goldfields, and there is still hope that the same rocks will yet be found to contain deposits as rich as those that have made Tokatea Hill famous in the history of the Coromandel Goldfields.

MIDDLE ISLAND.

So far as quartz-mining in Marlborough is concerned, there is nothing of any moment to report. Work has been carried on principally at Jubilee Mine, Top Valley, near Blenheim, but the average yield of gold per ton of stone is small. A proposal for the amalgamation of other interests and the reconstruction of the company was made towards the end of the year, work being suspended pending the completion of the new arrangements.

The mines at Taitapu, near West Wanganui Inlet, continue to be steadily worked. At the Golden Ridge Mine the principal work during the year has been in the development of the Anthill section of the property. The Golden Blocks Mine has worked a good-quality stone, the average value being £3 8s. 3d. per ton.

In the Westport district the mines at Mokihinui and Waimangaroa have not done much during the year, and their yield has in consequence been very small.

The Alpine Extended Mine at Lyell has not produced any notable quantity of gold during the last three years. In the meantime a considerable amount of development-work has been done at workings from an inside shaft sunk from the low-level adit. The reef has been found irregular and patchy, but at my last visit at the commencement of the present year the prospects looked better than has been the case for a considerable time past.

A party of men working a leader in the old United Italy Claim above Lyell have done remarkably well: 133 tons of quartz yielded gold to the value of £1,787, or an average of £13 8s. 8d. per ton. This is reported to have given a net return of over £9 per week per man for five months' work. A little exploratory work on behalf of an Auckland syndicate has been done during the year at New Creek, near Lyell.

On the Victoria Range broken quartz lying on the surface supplies a fifteen-stamp battery during that period of the year when the snow is off. The average value of last year's crushing was £1 9s. 9d. per ton. As there are no expenses for underground mining, the above value leaves a very satisfactory margin of profit.

The Welcome Mine at Boatman's (Capleston) has been taken over by the Consolidated Goldfields of New Zealand (Limited). Prior to this arrangement the working of the mine had been let on tribute, and some very good returns obtained. For the present the tributing agreement will be continued under the new proprietary.

At Reefton mining operations have been steadily carried on during the year. Very full information as to the operations of the Consolidated Goldfields of New Zealand (Limited) and the Progress Mines of New Zealand (Limited) is given in the reports of Mr. Tennent, Inspector of Mines, and the Warden, Mr. Kenrick. These two companies, which are under the same general management, are large employers of labour (an average of about five hundred persons being employed), and their operations during the past seven years have demonstrated the possibilities of deep mining in the Reefton district. Dividends amounting to £34,375 were paid by the Progress Mines of New Zealand (Limited) during the year, which bring the total dividends paid since the company took the properties in hand to £165,000.

The Keep-it-Dark Mine has also been a consistent gold-producer and a dividend-paying concern. This mine gives employment to fifty-eight persons, and during last year 12,568 tons of quartz was mined. The gross yield by amalgamation and cyanide was to the value of £20,473 2s 2d., and dividends to the amount of £8,750 were paid, making a total of £132,166 13s. 4d. so paid since commencing operations. It is intended to sink the shaft down to deeper levels, at which equally good results may be reasonably looked for. One prominent feature about the deep levels in the Reefton district is the comparatively small amount of water to be dealt with, a feature which reduces both capital-expenditure and working-cost.

At the New Inkerman Mines development-work still continues, and a fairly comprehensive battery test was put in hand during the year. The battery comprises fifteen heads of stamps and a cyanide plant, together with canvas-tables and settling-tanks for the recovery of concentrates and deposition of slimes. It is intended to thoroughly test the quartz won in development work, &c., with this battery before incurring the expenditure necessary for the erection of a large and thoroughly modern plant.

The Big River Mine continues to maintain its reputation as a patchy property: nevertheless, rich patches of stone are met with from time to time, which fully compensate for the expense of locating them. As evidence of this, the returns for the year enabled the company to pay nearly £1,200 in dividends after meeting liabilities and working-expenses. The total amount paid in dividends since the mine commenced is £47,366 5s.

Work has been carried on at a few other properties in the district during the year. Operations have been resumed at the Victoria and Inglewood Mine under private ownership. With the erection of a cyanide plant it is expected that payable returns will be made.

Comparatively little work has been done during the year on or adjacent to the Paparoa Ranges. Perhaps the most notable work has been the developments at Garden Gully. The holders of this property have been very persevering, and now claim to have proved the existence of payable reefs which can be worked from adit levels for many years to come. A company is to be formed for the purpose of developing the property on a fairly extensive scale and laying down a large battery plant.

Quartz-mining in Otago occupies a very secondary position in comparison with mining in various forms for alluvial gold, the value obtained from quartz-mines during the year amounting only to £22,110 17s. 6d. In the Lake Wakatipu district only two mines have been on the list of gold-producers—viz., the Shotover Quartz-mining Company's mine, near Skipper's Point, and the Premier-Sunrise Mine at Macetown. The former mine was closed for some time, but has lately been reopened by an adit from the battery level and a new battery erected. The results obtained from crushings should give encouragement to other parties who are conducting prospecting operations in the district. The Achilles Mine (formerly known as the Phœnix) at Bullendale was

closed down some time ago. This mine was latterly worked by an incline shaft, and the stone in the low levels did not yield returns satisfactory to the owners. It has, however, been sold to a private party, and work has been recommenced on a different footing to that which obtained under the previous ownership. It is contended that a considerable extent of ground was left unworked above a level accessible by adit, and it is to win this area that the new proprietary has undertaken the present operations. The venture will be watched with much interest, and there is no doubt that the discovery of a good body of stone, which will afford remunerative returns, will be the means of reviving this once active, but now practically deserted, locality. The Premier-Sunrise Mine has not been quite so successful as usual during the year owing to the patchy nature of the stone worked; still, it has paid its way after providing for development and some new plant, &c., and, in addition, a surplus has been remitted to the London office. A very full report by the mine-manager is incorporated with the report of Mr. Green, Inspector of Mines. The old Tipperary Mine, Macetown, last worked by the Westralia and New Zealand Gold Explorers (Limited), has been taken over by the Indian Glenrock (Wynaad) Company (Limited), and operations have been commenced with the object of reopening the mine.

Near Cromwell there has been a little desultory work done on the Carrick Ranges and at Bendigo, but nothing of importance. If the reef-system at Bendigo is to be properly explored below the old workings, a low-level crosscut tunnel will have to be driven from the level of the river-flat so as to obviate the necessity for heavy pumping. It is well known that more than one reef exists in this locality, and that in the early days of quartz-mining in Otago very profitable returns were obtained from the working of these quartz reefs. I have in previous reports pointed out that down to a certain level the quartz is oxidized, and yields its gold very freely, but at greater depth the ore becomes more refractory. As the cyanide process had not been introduced into the colony when quartz-mining in this part of Otago was at its height, the ore at levels below that at which oxidization ceased was considered worthless as it would not yield its gold under amalgamation. The alluvial goldfields of Otago offered more inducements for the expenditure of capital, and thus quartz-mining gradually declined. Considering quartz reefs are known to exist at various points along a line drawn from near the head of Lake Wakatipu to near Oamaru—viz., at the Invincible Mine, Glenorchy; Bullendale, Macetown (Premier Mine), Bendigo, and Balruddery—other places on and adjacent to the line referred to may be well worth prospecting.

Two mines on the side of the Old Man Range, near Bald Hill Flat, and a number of properties in the locality of Macrae's, are worked by private parties. At some of the mines at Macrae's, scheelite is associated with the quartz, one party (Messrs. W. and G. Donaldson) having concentrating plant for the separation of the scheelite from the sands. This is shipped to Europe. The Barewood Mine has been worked with good results, 2,083 tons of quartz yielding gold to the value of £6,535 18s. 1d., and concentrates value £391 6s. 5d., or a total of £6,927 4s. 6d., which gives an average value of £3 6s. 6¼d. per ton. The O.P.Q. Mine, at Waipori, is still standing idle. Very little work has been done during the year at Preservation Inlet. Some prospecting has been done at Newton's Beach, Stewart Island. It is reported that a reef varying from 6 in. to 2 ft. in thickness has been discovered which yields a very high assay value. Further developments will be awaited with interest.

HYDRAULIC AND ALLUVIAL MINING.

Generally speaking, there is not very much change to note as regards this branch of the mining industry since last report. Most of the claims at work have been in operation for some years past. Here and there a few claims have been exhausted, others continue to work in a steady manner, making such extensions as the nature of the undertakings demand, and in a few instances new work for the purpose of opening up claims has been undertaken. This latter feature is in evidence at Charleston Beach (West Coast District), where a plant for working a beach-terrace deposit on the north side of Messrs. Powell's claim by hydraulic sluicing and elevating has been under construction. Presumably the ground will be similar to that worked by Messrs. Powell, which consists of sand carrying fine gold. The method of treatment is by distributing the sand and water as evenly as possible over a series of tables covered with silvered plates, the gold being amalgamated in the same manner as at a battery. New work is also in hand south of Ross, in the locality of Fox and Cook's Rivers, Okarito, at Omarua, and at the Waiho River for working alluvial deposits.

Among other propositions likely to come to the front is that of bringing in water to work the alluvial deposits at Back Creek and Seddon's Terrace. The ground is reported to be of a good payable character (see report of Mr. Warden Day), and it is confidently anticipated that with a good supply of water for sluicing purposes a prosperous future would be insured.

In respect to the yield of gold from the ground worked by water from the Government (Waimea–Kumara) water-races, this shows an increase as compared with the previous year, with a somewhat fewer number of men, as will be seen from the following schedule:—

	Average Number of Men.	Ounces of Gold won.	Value. £ s. d.
Financial year 1902–3	82·41	6,717	26,196 6 0
" 1903–4	77·00	7,112	27,736 16 0
Increase	...	395	1,540 10 0
Decrease	5·41	...	...

Full details of this work appear in the report of Mr. Alex. Aitken, manager of the Waimea–Kumara Water-races.

The completion of the siphons in connection with the Mountain Hut Water-race in North Otago has given a decided impetus to alluvial mining in the neighbourhood of Maerewhenua, which had for some years past been in a languishing condition in consequence of the scarcity of water. There is auriferous ground in this locality which will take many years to exhaust, as the facilities for working available areas are limited by the volume of water which can be brought on to the field.

Owing to the severity of the winter, hydraulic mining in Central Otago received a decided set-back. In the localities of St. Bathan's and Matakanui especially (where the snowfall was actually 3 ft. 6 in. deep in one night) the races were snow-filled before the water could, in some cases, be turned off, and the great depth of snow cut off all access to the races for some time. Severe frosts followed, and when the subsequent thaw set in several landslips occurred and carried away lengths of the races. In other instances the sides of the races were burst out in consequence of the thaw. The cost of the necessary repairs which had to be effected is set down at upwards of £1,150 over and above that which has to be ordinarily expended at the close of each winter, and, taking the average, the loss of time consequent upon these breakages to water-races would reduce the length of the sluicing season by fully 25 per cent. The natural effect has been to reduce the amount and increase the cost of the gold won. Although the greatest damage appears to have been sustained in the localities referred to, the industry in other centres suffered more or less in consequence of the long and severe winter, and in this manner the shortage of gold from Otago (referred to in the early part of this report) is to be accounted for.

Detailed particulars of the operations at the various properties in the Middle Island worked as sluicing and hydraulic claims will be found in the reports of Mr. Tennent, Inspector of Mines for the West Coast District, Mr. Green, Inspector of Mines for the Southern District, and the several Wardens for the various sub-districts of the Middle Island.

A new invention for gold-saving purposes, which appears to be applicable as an adjunct to the ordinary tables as used at hydraulic claims, is described under the head of "Dredge-mining."

Dredge-mining.

Owing, in a great measure, to the unpayable character of the ground on which dredges had been placed as a result of the "boom" in dredge-mining of some three years ago, and also in some instances to the unsuitability of the dredges themselves to successfully work auriferous ground which might be worked to advantage by hydraulic mining, or even by more powerfully built dredges, quite a number of dredges have ceased operations during the year. Many of these have been sold and removed to other dredging centres, some have even been exported to Australia for service there. Notwithstanding this, it is somewhat significant that the number of working dredges returned at the end of the year was identical with that of the previous year—viz., 201, and this speaks for itself as to the steadiness of the industry at the present time. In accounting for the coincidence in the face of the facts above mentioned, it may be remarked that the reduction in the number of working dredges in the West Coast District (four) and the Otago portion of the Southern District (ten) is exactly balanced by the increase (fourteen) in the number of dredges at work in the Southland division of the Southern District.

The following summary shows the number of dredges in each district at the end of the year 1903.

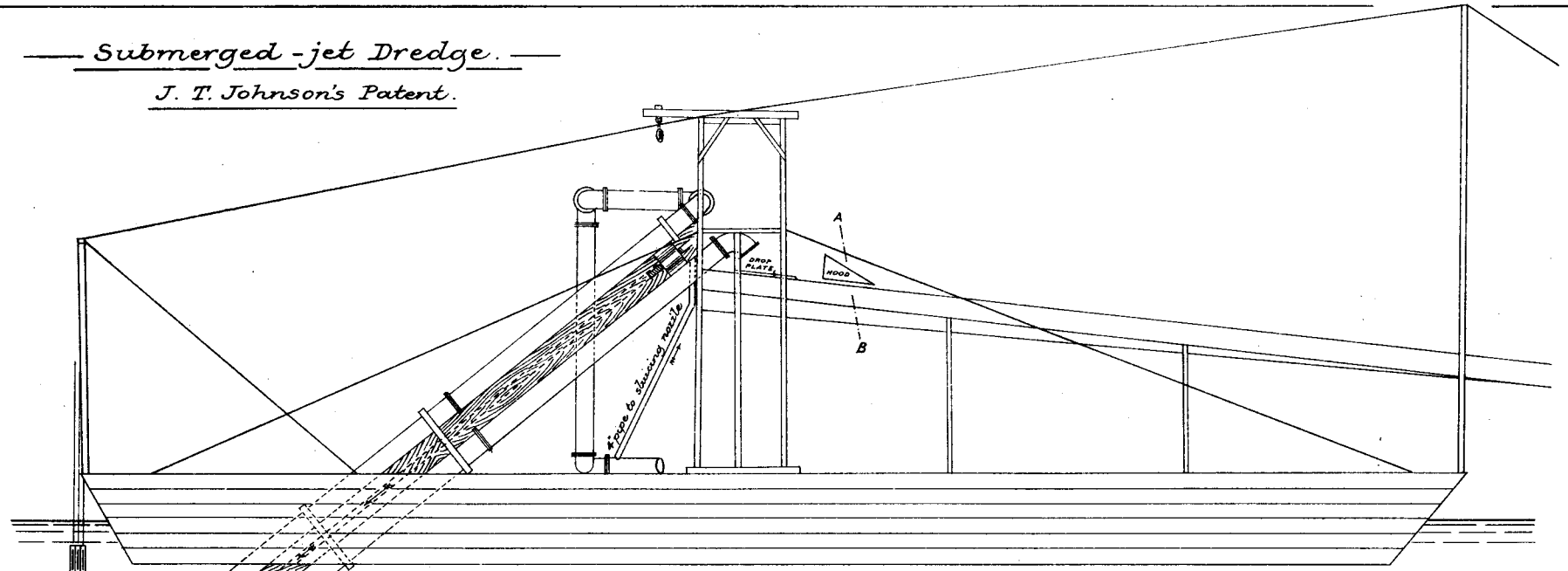
District.	Working.	Standing.	Building.	Under Removal or Rebuilding.	Dismantled.	Wrecked or Stranded.	Total.
Marlborough, Nelson, and West Coast.	46	16	..	1	4	5	72
Southern	155	12	7	18	8	...	200
Totals	201	28	7	19	12	5	272

It is worthy of note that the alluvial flats in the valleys of the Waikaka and Waikaia Rivers in Southland have attained to positions of prominence as dredging centres. The earlier attempts at dredging on the Waikaia River proved failures, but it is now found that the best ground for dredging is not in the river itself so much as on the adjacent flats and tributary valleys. A dredge on the valley of the Argyle Stream just above Waikaia Township has demonstrated the value of that tributary as a dredging-area; and a portion of the ground higher up, held by the Argyle Sluicing Company, and hitherto worked by hydraulic sluicing and elevating, is to be worked by a dredge, the motive power being water, applied in similar manner to that adopted at Waipori and Cardrona under Mr. W. O'Brien's patent rights.

On the Clutha River and its principal tributaries dredging operations were seriously impeded by severe frosts and subsequent floods. The winter is, as a rule, the most profitable portion of the year owing to the low state of the rivers which enables dredges to "bottom;" but the last winter, as well as that of four years ago, will be long remembered as being of exceptional severity. Many dredges had to stop work, and when the thaw set in the rivers became flooded to such an extent that dredging was necessarily suspended, hence the aggregate returns won were considerably less than would have been the case under average conditions. Some very good and even phenomenal returns were, however, obtained by several dredges in the localities of Alexandra and Cromwell, whilst the condition of the rivers was favourable for dredging. Interesting particulars of the work in this part of Otago will be found in the report of Mr. Warden Burgess.

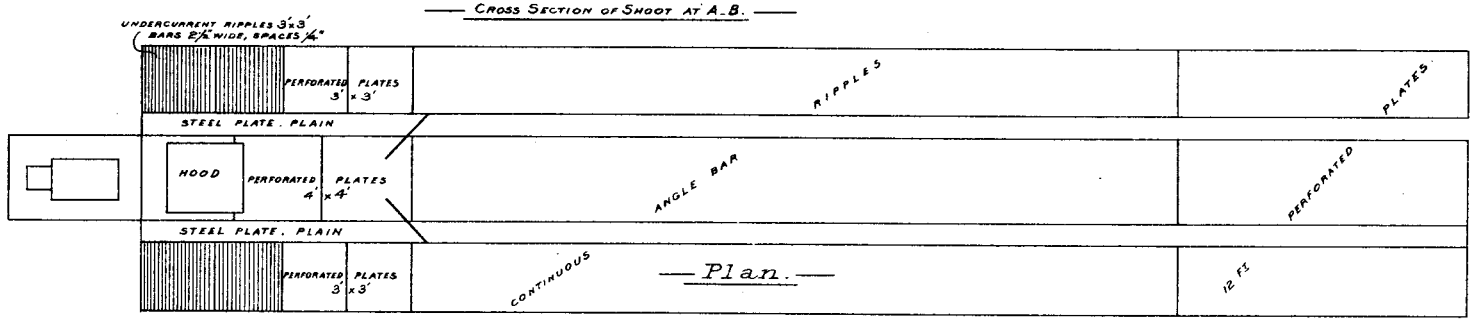
Submerged-jet Dredge.

J. T. Johnson's Patent.



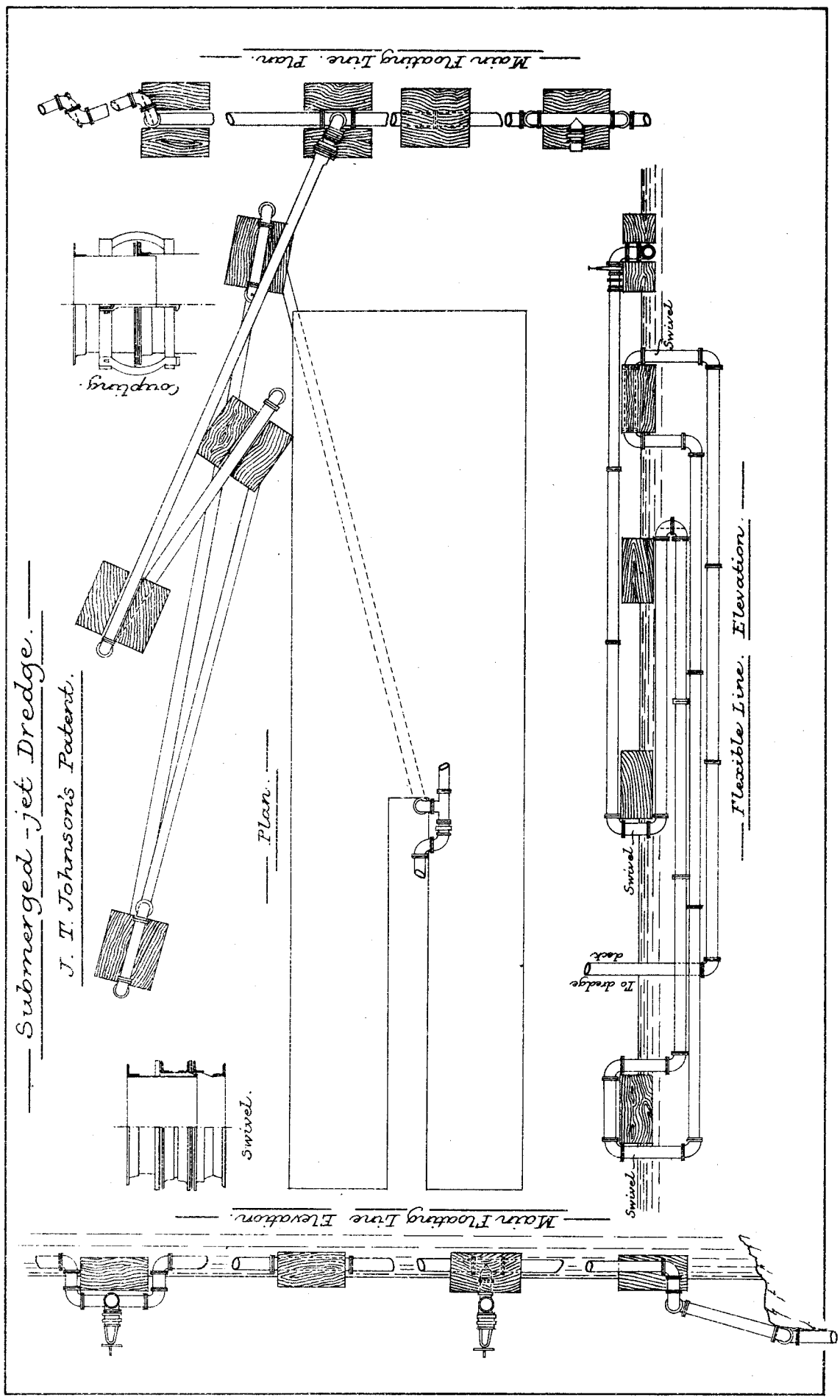
Elevation.

Cross Section of Shoot at A-B.

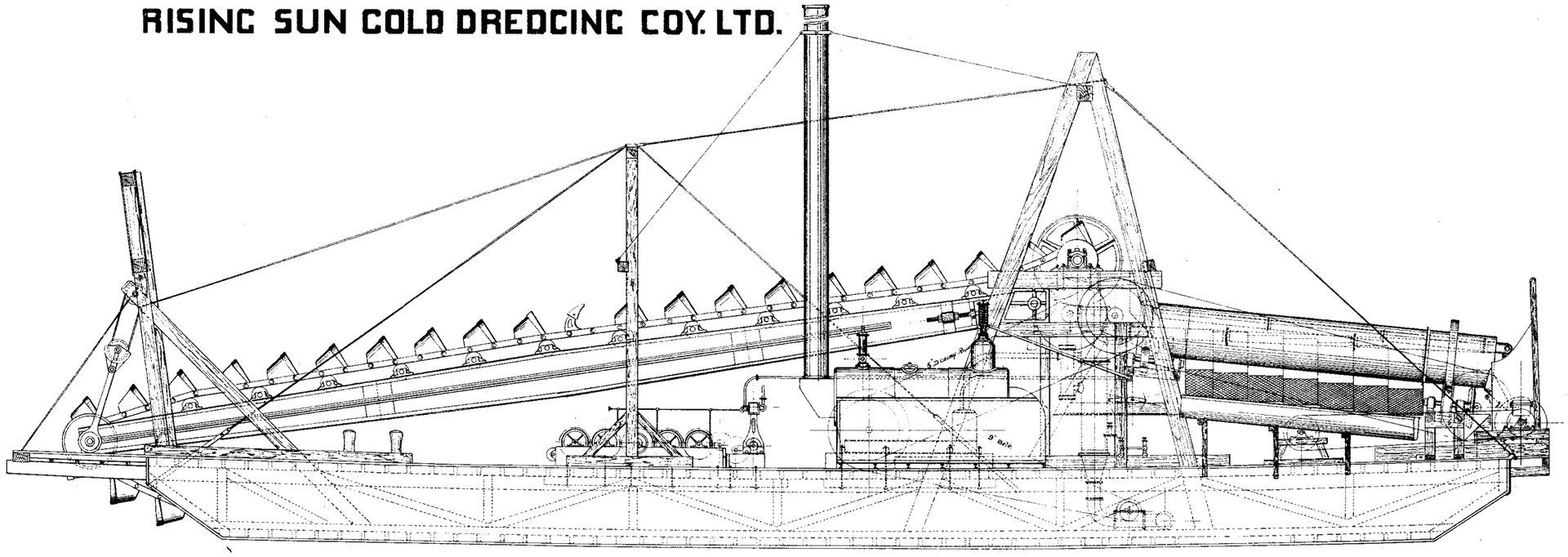


Plan.

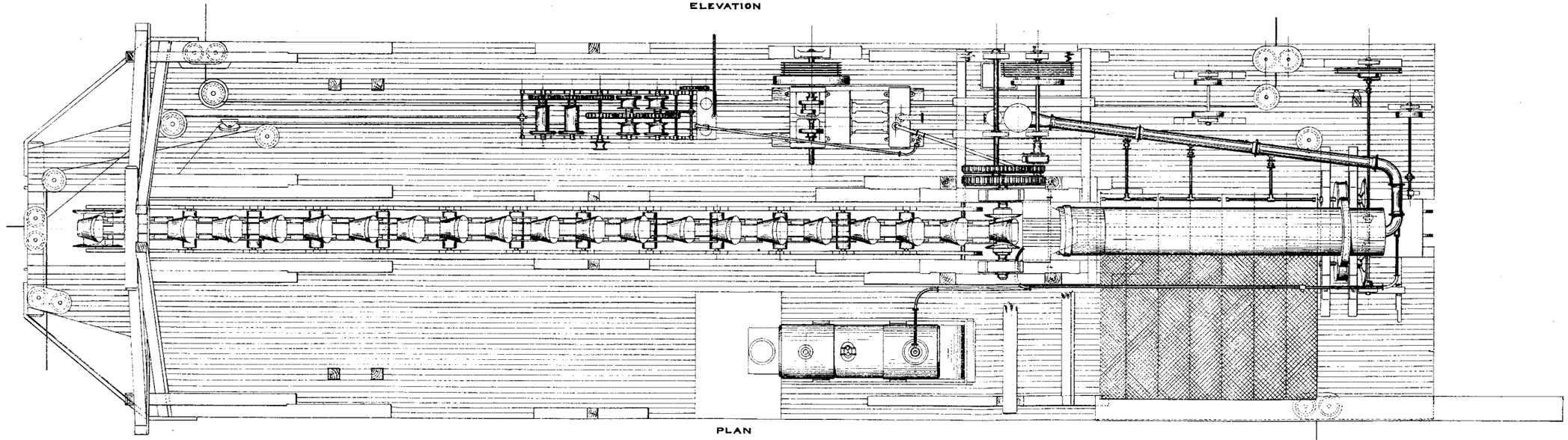
C.-3.


Submerged-jet Dredge.
J. T. Johnson's Patent.
Main Hoisting Line. Plan.
Coupling.
Plan.
Swivel.
Swivel
Swivel
To dredge
deck
Swivel
Flexible Line. Elevation.
Main Hoisting Line. Elevation.

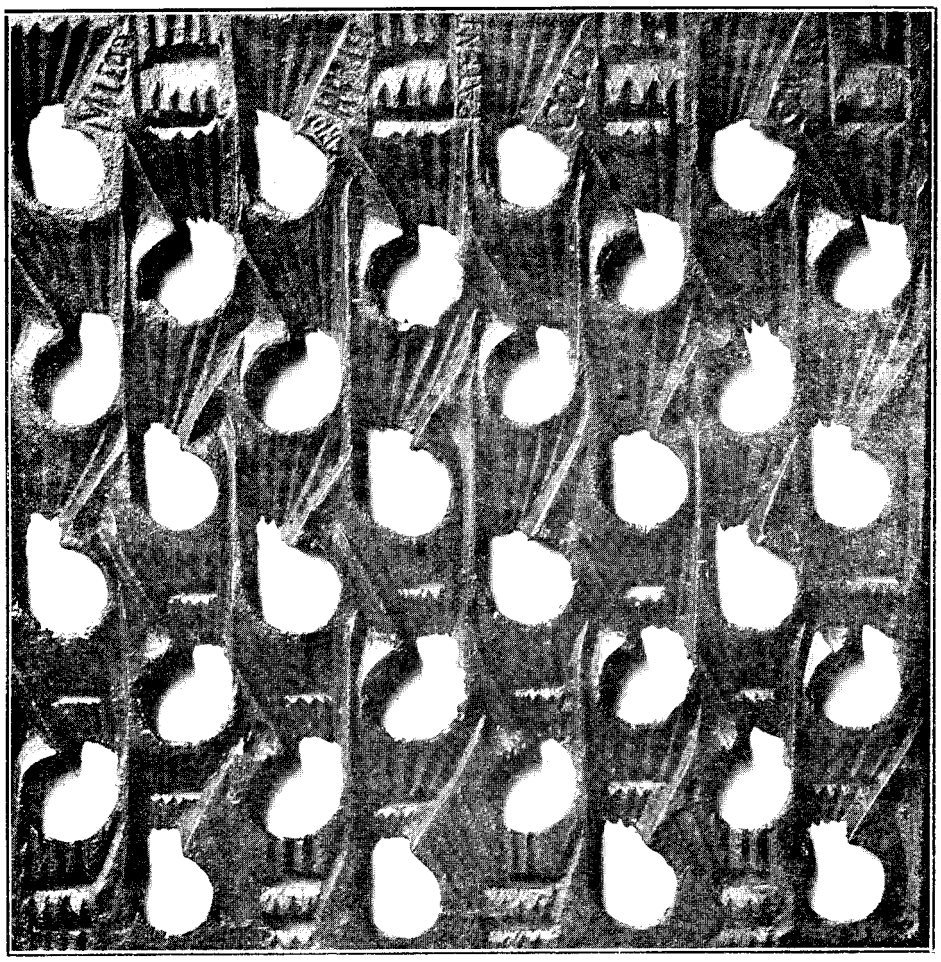
RISING SUN GOLD DREDGING COY. LTD.



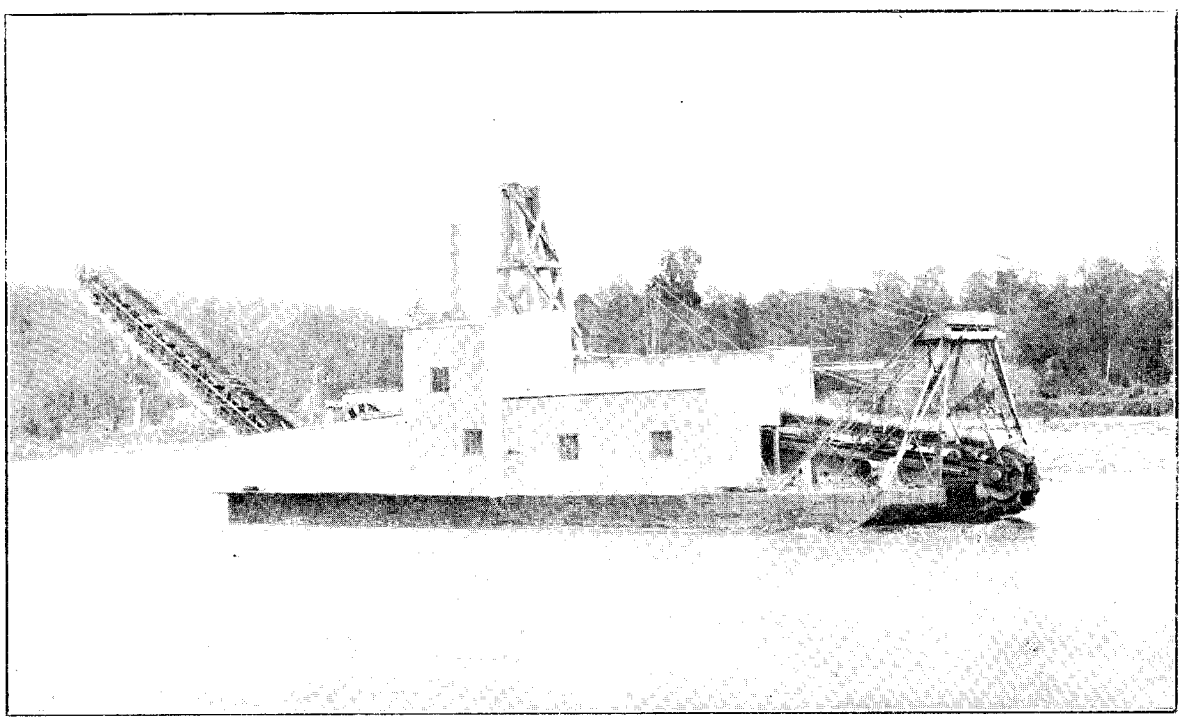
ELEVATION



PLAN



McLEOD AND HURLEY'S PATENT "DIVIDEND" GOLD-SAVER.



MOKOIA DREDGE, BULLER RIVER.

Mr. Warden Kenrick has, in his report, given a very interesting summary of the results of dredging in the sub-districts within the jurisdiction of the Courts over which he presides in the West Coast Inspection District.

During the year there were six fatalities in connection with dredging operations—viz., three in the West Coast district and three in the Southern district. This is a decrease of three as compared with the previous year. Of the six fatalities referred to, four were by drowning, one by being caught in machinery, and one by a fall on to the deck from an elevated position.

Construction of Dredges.

Generally speaking, and with the exception of a new departure illustrated and described later on, there is very little to note under this heading. The experience gained on the Clutha River has shown the necessity of lengthening the ladders of several dredges in order to work the ground to better advantage. It has been asserted that one reason of several of the dredges in the Clyde–Cromwell Gorge not getting the results anticipated, is that the ladders are not long enough, nor the machinery generally strong enough, to tear through and work below a hard crust which is said to overlie the bottom and thus cover the richer gold-bearing wash.

One of the largest and most recent dredges put to work is the "Rising Sun." This is placed on a claim on the upper part of the Clutha River (about two miles above Cromwell), which includes an area of both river and river-banks. The dredge has been built to the design of Mr. F. W. Payne, Consulting Engineer, Dunedin, to whom I am indebted for the drawing and also the following description :—

"The hull is 118 ft. long by 35 ft. 6 in. beam, by 7 ft. deep; built throughout of blue-gum frames and kauri planking.

"The boiler is of the externally-fired multitubular type, 15 ft. long by 5 ft. diameter, with a working-pressure of 150 lb. per square inch. This boiler was specially designed by Mr. Payne to burn the local lignite, and has an exceptionally large grate-area. The objection to the externally-fired type of boiler—that it is apt to burn, due to collection of sediment, when used in connection with dredges—has been overcome by a special arrangement by which the feed-water is vapourised immediately on entering the boiler, and the solids deposited in a funnel or hopper from which they can he blown out at intervals by the engineer in charge. The economy of this boiler is evident, considering that, though this is the largest gold-dredge in New Zealand, the coal-consumption is only seventeen bags of lignite per eight-hour shift, a saving, as compared with much smaller dredges, of over seven bags per eight hours. (Sixteen bags equal one ton.) Taking an average of 80 indicated horse-power, this gives a consumption of $3\frac{3}{4}$ lb. per hour per horse-power.

"The engine is by Marshall and Sons (Limited); compound condensing with cylinders of 10 in. and 16 in. diameter by 18 in. stroke, and indicating 100-horse power.

"The ladder is 82 ft. long from centre of pivoting-shaft to centre of bottom tumbler.

"The buckets are of 7 cubic feet capacity.

"The winches consist of 6 barrels and a surging-drum and are driven by a pair of Marshall's vertical engines fitted with reversing-gear.

"The screen is 31 ft. long by 4 ft. 6 in. diameter, driven by friction-rollers.

"The tables are of 360 square feet area and are provided with independent sparge-pipes at head. The water for the tables is supplied by a 12 in. centrifugal pump driven direct from the fly-wheel of main engine.

"The elevator is one of Payne's patent centrifugal type, and consists of two striking-faces, the outside diameter of the path of these faces being 3 ft. 1 in., the width of striking-faces between the side plate is 2 ft. 6 in., and the speed is 300 revolutions per minute. It is driven by a counter-shaft off the first-motion shaft of dredge; fast and loose pulleys are fitted on elevator-shaft, also an over-riding gear which makes the elevator a free wheel, as otherwise, upon any slackening of speed of engine and particularly when stopping, the momentum of the elevator would destroy the belt driving it. The elevator has proved quite capable of dealing with the exceptionally large quantity of stuff put through by the large buckets of this dredge, and has never once caused a block or exhibited signs of overloading even when the buckets have been charged to overflowing. The stacking capabilities of the elevator are in excess of requirements, as is proved by the fact that recently the dredge was able to work two weeks without it, due to the tailings having been propelled so far astern as to allow room to dispose of them for that time without stacking. During this time the coal-consumption remained practically the same as when the elevator was working, the difference being so small that the engineer in charge could not state definitely that any difference existed.

"For the beater-bars (constituting the principal wearing-portions in connection with these elevators) different materials have been tried, but as there is not a wide choice of materials available in the colony, no doubt considerable improvement will shortly be effected by the introduction of a harder class of material such as chrome or manganese castings.

"The tailings-stack is from 20 ft. to 25 ft. high, and owing to being level on top and also tightly packed—due to each individual stone falling with considerable force—this height may be safely taken to contain the same amount of stuff as a stack 30 ft. put up with a bucket-elevator where the stuff is loosely stacked and peaked at top."

Johnson's Submerged-jet Dredge.—A new departure in dredge-mining, applicable, however, to those places only at which hydraulic power is available, has been made by Mr. J. T. Johnson, of Waipori. I have not yet seen this plant at work, but Mr. Johnson has kindly favoured me with drawings for reproduction and also the following description :—

"The principle of the submerged-jet dredge is simply that of the hydraulic elevator adapted to the requirements of a dredge, and consists of ordinary dredge pontoons, divested of boiler, engine, and bucket-ladder, these being replaced by a hydraulically-driven Pelton-wheel to work the winches, an hydraulic elevator in place of a bucket-ladder to raise the material to the shoots, and a breaking-down nozzle working on the submerged face to disentegrate the material.

"The power-supply water is conveyed in a main pipe-line as in ordinary sluicing to the leve of the claim to be worked, and conveyed from there to the dredge in a patented flexible submerged line supported by floats. The idea of submerging the line is to relieve the floats of the weight of water in the pipes and to enable a longer span of pipes to be carried from float to float, thus extending the length of face reached by the flexible pipe-line. By carrying the last span underneath the dredge, the dredge is enabled to pass the flexible line to work first on one side of it and then on the other, thus doubling the length of face that can be reached when the flexible line works on one side of the dredge only. The flexible line connects on deck with a deck-pipe supplied with valves, by which the water is deflected as required to the elevating-jet, breaking-down nozzle, and Pelton-nozzle.

"The construction of the dredge is so simple and obvious that a glance at a sketch of the dredge explains the whole thing, and it is almost unnecessary to add detailed description; the altered conditions under which elevating is carried out, however, are accompanied by results which almost entitle the 'submerged jet' to rank as a new principle of working.

"A comparison of the submerged jet with ordinary hydraulic elevating is instructive. In a hydraulic-elevating claim the elevating-jet would in lifting say 50 ft., have to overcome the weight of the whole column of water, *plus* the friction of the whole pipe. In the case of the same lift with a submerged jet, with say 30 ft. of the pipe submerged, the elevating-jet would merely have to overcome the weight of 20 ft. of the column of water, *plus* the friction of the whole pipe, making a saving in the weight of the submerged portion of the column of water in motion. A further increase in effectiveness is due to the fact that a shorter lift is required, as with a fixed elevator it is necessary to put a well-hole in the bottom to give fall for the sluiced material, and raise the outlet an extra height to permit of the tailings stacking; while with the submerged-jet dredge the intake, as in dredging, does not need to go below the level of the bottom, and the tailings are spread almost at the level of the surface of the ground treated. A further great increase in lifting-capacity is due to the altered distribution of the water to the various outlets, a much greater quantity proportionately going to the elevating-jet. Thus, in hydraulic elevating, of a water-supply of twenty-two heads, ten heads would be required for the sluicing-nozzle to disintegrate the material and drive it forward to the elevator, and only twelve heads would be available for the elevating-jet; whereas the same water-supply applied to the submerged-jet process would be distributed thus: two heads divided between the Pelton wheel and breaking-down nozzle, leaving twenty heads available for the submerged elevating-jet. So not only is the lifting-power of each head used on the elevating-jet increased by the submerged process, but of a given water-supply a greater proportion is available for elevating, while plant-shifting is totally dispensed with.

"The first dredge of this type was worked at Waipori for seven weeks, the available quantity of water being fifteen heads. To utilise this a $\frac{3}{8}$ in. tip was used on the Pelton-wheel nozzle, a $\frac{3}{4}$ in. tip on the breaking-down nozzle, and a 4 in. jet for elevating; the throat was 12 in. inside diameter and 15 in. outside, with 15 in. dirt-pipe. A right-angle bend on top deflected the discharge on to a drop-plate 4 ft. by 6 ft., from whence it spread over a spreading-table 12 ft. by 12 ft., and from thence into three chutes, totalling 600 square feet of gold-saving area. The tables and chutes were fitted with perforated plates and angle-bar ripples.

"On starting, the lifting-power of the dredge proved too great for even the large shoots provided, and a regulator had to be provided at the intake to lessen the inrush of gravel, while to break the force of the stream of water and material on the shoots a hood was so placed as to break the force of the current before it left the spreading-tables. I estimate the lifting-power of the dredge-elevator at 1,000 tons per hour, while the capacity of the tables was 250 tons per hour, and no difficulty was experienced in gravelly formation in keeping the tables going at their maximum treating-capacity. The same water used in hydraulic elevating to advantage in the ordinary way lifted less than one-fifth of the material per week."

McLeod and Hurley's Patent "Dividend" Gold-savers.

The patentees, Messrs H. N. McLeod and G. A. Hurley, of Wellington, have supplied the following description and accompanying photograph of their patent gold-saving appliance:—

"So many forms of gold-saving plates have existed for the past fifty years with very little improvement in the principle of construction that an original idea, involving a radical departure from old ideas, is interesting and worthy of record. The designers have started out with the task of saving fine gold—not necessarily black-sand gold, although that is part of their programme for the future—and in ignoring coarse gold, they have, perhaps, acted wisely. The trouble on dredges and with sluicing claims is not that the coarse gold is lost, but that the fine gold is lost, and in proportion to their success in winning the finest samples of gold, will the savers replace other plates and justify their name. It is claimed that at the tail of save-alls and in streaming down these savers have proved to be far superior to any appliances yet used for saving fine gold, and that so far on the main spread of tables they are, at any rate, as good as present appliances. It is hoped to be able to demonstrate by experiments, now proceeding, that when the savers have been nicely adjusted to the water conditions on the main tables, they will be as effective as on the save-all. It is not claimed that for black sand they have done any more than save exceedingly fine gold, much of which was amalgamated through contact with the silvered plates.

"Further trials are to be made with black sand but at present the inventors are pushing their experiments in the direction of the finest gold in ordinary wash. The plates used are from $\frac{3}{4}$ in. to $2\frac{1}{2}$ in. in thickness, and 1 ft. square, the cells or holes going through them, so that they are really false bottoms resting on the plush or matting of the ordinary tables.

"The cells, by their peculiar shape and aided by the current of water carrying 'wash' with it, set up a motion peculiarly their own, the result being a series of eddies each directed towards

the one object in view, namely, that of precipitating the gold to the bottom of the cell and lifting the 'wash' which has been treated over the top rim of one cell into the succeeding cells, where it will again and again be treated until it finally drops back into the river or tail-race.

"In these savers the 'wash' is led down a gentle slope towards the bottom of each cell, which it enters in such a way that the whole of the contents of the cell feel the influence of the eddying water. The interiors of the cells are constructed so as to retain all gold which reaches the bottom, and the immediate effect is the formation of a skin of concentrates over the particles of gold at or near the bottom of the cell. These concentrates are constantly in motion, and the strength of the current at the base of the cells is far less than at or near the top, the result being a settling or precipitation of the gold and the carrying-off of the 'wash,' leaving the gold behind. In the ordinary pattern there are thirty-two cells to a square foot of saver, but for black sand the savers will contain perhaps several hundred cells to each square foot. At present the problem being worked out is the adjustment of the depth of the cells to the requirements of 'wash,' and this must necessarily take time and money before the adjustment becomes perfect.

"The advantages claimed for the savers are as follows:—

"1. Being made of cast-iron (and later probably this will be hardened) the wear-and-tear is reduced to a minimum.

"2. Being plates, they can be put down on plush or matting exactly as expanded metal is put down, except that they are heavy enough to keep in their places without being nailed or otherwise fastened.

"Each cell is by gravitation automatically doing the work of the miner when 'panning off,' and to have (say) ten savers on a dredge means that 320 cells are 'panning off' continually and passing on what each has finished to the cell next below.

"4. Perpendicular 'dead riffles' catch and hold the finest of the light gold.

"5. All 'wash' entering the cells is kept moving in such manner that the gold is precipitated, whilst the 'wash' is carried on over the top into the next cell, and so on.

"6. The savers may be lifted separately, and may be used either along the ends of the save-all and tables, or may cover the save-all and tables from the tail upwards for a few feet or more.

"7. Where the flow of water is insufficient to obtain the automatic motion required an outrigger may be placed at the tail of the tables, and the savers may then be used on the outrigger which should be placed at an angle sufficient to give the necessary fall.

"8. The cost is very moderate."

The illustration shows a foot-square saver, the white portion representing plush or matting underneath the saver.

A set of "Dividend" savers has been installed on the Rising Sun dredge, near Cromwell, an illustration and description of which dredge appears in this report.

ACCIDENTS AND FATALITIES.

The following statement shows the number of non-fatal accidents attended with what at the time was considered or might perhaps prove to be serious injury, which have been reported to the Department during the year, and also the fatalities in connection with the various branches of the gold-mining industry during the year:—

Class of Mining.	Northern District.		West Coast District.		Southern District.		Total.	
	Serious.	Fatal.	Serious.	Fatal.	Serious.	Fatal.	Serious.	Fatal.
Quartz	23	8	2	...	1	1	26	9
Hydraulic and alluvial ...	No workings.		...	2	2	2	2	4
Dredging	No workings.		2	3	13	3	15	6
Totals	23	8	4	5	16	6	43	19

TREATMENT OF TAILINGS AND SANDS FROM SMALL BATTERIES.

In my report of last year reference was made to the loss of tailings from small quartz-mines especially, and a suggestion was thrown out that the tailings from such mines should be stacked for future treatment, as it would in all probability pay to erect simple cyanide plants in convenient positions in order to treat the accumulated tailings of a few small mines. Such a plant as then suggested itself to my mind, has been erected at Coromandel by Messrs. Shepherd and Patterson, primarily for the purpose of treating the accumulated tailings from the Hauraki battery. The character of this small works will be seen from the accompanying photographs. The tailings are sluiced by a small jet of water to the bottom of the uptake-pipe of a small hydraulic elevator, and thence conveyed in a wooden spout carried on trestles to the cyanide-vats. This plant cost about £400, and has a capacity for treating 40 tons per week, one shift per day being worked.

SANITATION IN MINES.

In all mines the question of the most suitable means of dealing with human excreta is one which forces itself upon the management. At some of the smaller mines, and especially those entered by tunnels, it is the practice for workmen to come to the surface to evacuate, but at extensive mines—especially those worked from shafts—this is entirely out of the question. Among miners there are many men who are very cleanly in their habits and persons; others again are the very reverse. The latter will continue to utilise a disused working for the purpose of evacuation (and make no provision for burying their excreta) until the place is barely fit to pass by. Men of clean habits will take the precaution to bury their excreta, and where this is done the action of the clay or mullock (or coal-dust in collieries) deodorises it and no nuisance is caused.

The provision of latrine accommodation underground has not hitherto been attended with satisfactory results. I have seen accommodation of this kind in some large mines which fully convinced me that the remedy could easily be worse than the disease, and the adoption of underground latrines might create a far greater nuisance and danger than the indiscriminate use of odds-and-ends of places about the mine could possibly do. Again, where mine-owners and managers have provided suitable pails, &c., workmen have been known, not only to ridicule the provision, but to wilfully damage the appliances and so render them unfit for use. With such experiences as these managers cannot be blamed if they decline to provide sanitary accommodation in the mines.

There is, nevertheless, no doubt that the provision of accommodation of this character is most desirable in underground workings, and to make a system of this kind a success the appliances should be light and portable. A drum of galvanised sheet-iron fitted with seat and closely-fitting lid, also with handles to facilitate removal, suggests itself to my mind. Drums of this character could be distributed through the workings in convenient places. A box containing some deodorising agent, such as soil, ashes, or sawdust, should accompany each drum, and every person making use of the accommodation be required to put a measure of soil (or other deodoriser provided) into the drum just as he would flush an ordinary water-closet. Any person wilfully damaging these drums or leaving them uncovered should be punished. These drums ought to be taken to the surface at least every alternate working-day and emptied, the drums being well cleansed with water to which a small quantity of some disinfectant (preferably having a coal-tar product for its base) has been added. Such a disinfectant is to be found in most of the liquid (non-arsenical) sheep-dips on the market, which are practically identical with many of the disinfectants largely advertised and sold under various names. One gallon of liquid dip mixed with 80 to 100 gallons of water gives a solution of ample strength for ordinary purposes.

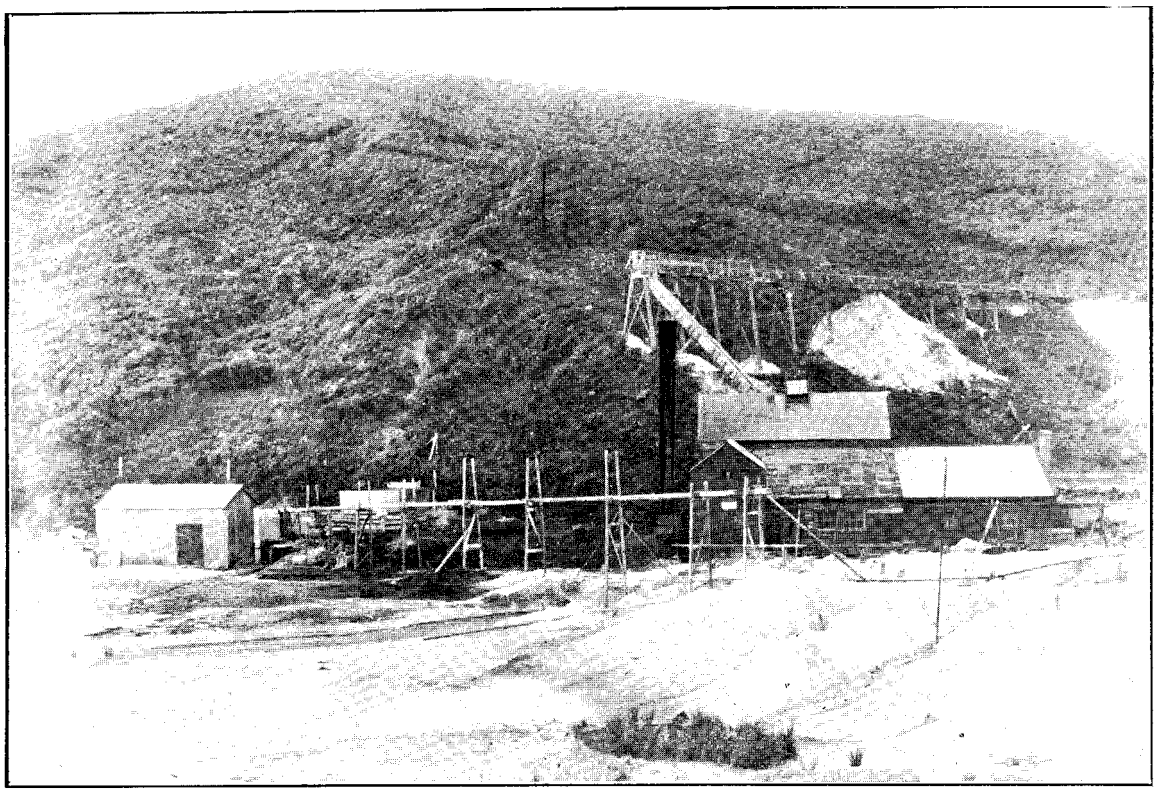
An outbreak of ankylostomiasis, or miners' worm disease, in a large tin-mine at Dolcoath, in Cornwall, was reported upon some time back by Dr. Haldane, F.R.S., for the Imperial Government. This report has only come into my hands since the foregoing notes were written, and as the matter is of considerable importance to the mining community, and prevention is ever better than cure, I have thought it advisable, in the interests of persons employed in mines, to quote a paragraph from Dr. Haldane's report. Dr. Haldane says, "After consultation with Mr. Martin (H.M. Inspector of Mines) and myself, Mr. Thomas (the manager of the mine) has now introduced a system of pails with accompanying disinfectants for use in the case of necessity by the men underground, and issued strict orders for the prevention of pollution of the mine by excrement. The parts of the mine known to be polluted are also being treated with disinfectants in order to destroy existing foci of infection. I trust that with the co-operation of the men these measures, together with the active treatment by the medical men in the district of all cases of ankylostomiasis, will soon stamp out the disease at Dolcoath. It must be clearly understood, however, that the prevention of the disease is largely in the hands of the men themselves, and that it is their clear duty to observe, and if necessary to enforce, the precautions necessary for preventing the pollution of a mine. Unless proper arrangements are made in other mines and carried out by the men ankylostomiasis is very likely to spread in England, and may easily affect coal-mines as well as metalliferous mines. The Cornish mines are specially exposed, owing to the fact that Cornish miners are continually returning from tropical countries, and that men known to have been infected are already scattered over the district. It must also be clearly understood that many of the men who are only slightly infected show no symptoms at all, as the presence of a few ankylostomes in the intestine may produce no symptoms. Such men may continue for years to be a source of possible infection owing to the presence of ova in the fæces."

If closets are provided on the surface, and the men encouraged to use them before going underground, the necessity for defæcating underground would be considerably reduced.

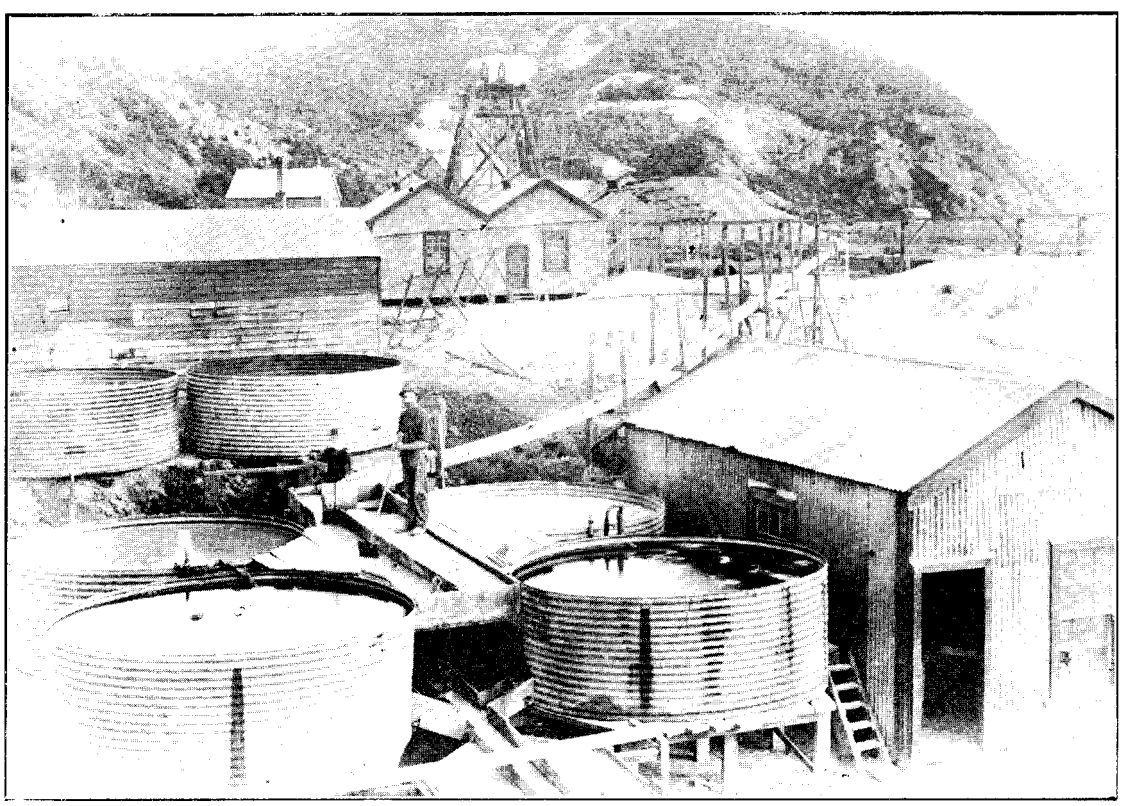
OLD ALLUVIAL CLAIMS AND TAILINGS-AREAS.

The working of many alluvial claims by hydraulic mining and land-dredging, as well as by the earlier methods of digging, has left areas of ground in various parts of the Middle Island quite unfitted for agricultural purposes. In many instances the land was not suited to farming, even if mining had never been done, and in this respect surface-damage cannot be seriously considered where conditions of this character obtained. There are, however, several places where hydraulic mining and dredging have left the surface in such a condition that the planting of forest-trees might be undertaken with advantage. A practical proof of this is to be seen in the Waikaka Valley, Southland, where the owner of a freehold property has planted trees on the tailings left by a gold-dredge working on the property.

In most cases, however, the old claims and tailings-covered areas are on Crown Lands, and therefore when the claims are worked out, very little if any interest is taken to utilise the ground



HAURAKI BATTERY AND MESSRS. SHEPHERD AND PATTERSON'S SMALL CYANIDE PLANT, COROMANDEL.



MESSRS. SHEPHERD AND PATTERSON'S SMALL CYANIDE PLANT, COROMANDEL.

for other purposes. Considering that year by year the native forests of the colony are being cut down and comparatively little tree-planting is being done, the time does not appear far distant when timber will be a much more costly article than it is now. It is, of course, fully recognised that in some districts the felling of the native bush is followed by one branch or other of the farming industry, and that under these conditions replanting of the forests *in situ* is out of the question. This, however, gives force to the suggestion now made for the planting of forest-trees—where this can be done to advantage—on old alluvial mining-areas and tailings-deposits.

The mining districts of Central Otago are climatically suited to fruit-growing, and now that railway-construction is getting well advanced, and quick communication with populous centres thereby established, the question of planting fruit-trees and so turning old mining-areas into orchards and fruit-gardens is a matter of practical interest and importance, as the water used for mining purposes in the past, and at the present time, will eventually be available for irrigation purposes.

MINERALS OTHER THAN GOLD.

Scheelite.

This mineral occurs principally near Glenorchy (Lake Wakatipu), and at Macrae's in the Otago District, also at Top Valley near Blenheim, in the Marlborough District. It is found in conjunction with quartz, but the only place at which it is being separated is at the battery connected with Messrs. W. and G. Donaldson's mine at Macrae's. The concentrated mineral finds a ready market in Europe. During the past two or three years numerous inquiries have been made for a supply of scheelite containing not less than 60 per cent. of tungstic acid. One inquiry alone was for a supply of from 20 to 40 tons per month, an amount practically equal to the present average annual supply.

Cinnabar.

A limited amount of work has been done during the year at the claim at Waitahuna, near Lawrence. The mine, however, has not yet reached a productive stage.

Galena.

A trial shipment of ore from the Kia-Ora (late Tui) Mine, near Te Aroha, Auckland District, was sent to Australia for treatment during the year, but although some assistance was given by the Government in this matter no report of the results of the trial have been received by the Department. From information supplied, it appears that the reef consists of quartz, carrying rich sulphide ore in shoots, and galena. The latter is said to vary from 6 in. to 5 ft. in width, with an average of about 2 ft.; the reef as a whole having an average width of 8 ft., although an occasional width of 20 ft. is attained.

Copper.

Operations have been commenced with a view to the reopening of the copper-mine near Nelson, and the work done is reported on by Mr. Tennent, Inspector of Mines.

Platinum.

This metal is associated with the alluvial gold at Orepuki and Round Hill, Southland, and also near Takaka, Nelson. The Round Hill Gold-mining Company separate the platinum from the gold, the yield being about 1 oz. of platinum to every 100 oz. of gold.

Hæmatite.

This mineral is manufactured into paint at Thames, and also at Parapara, near Collingwood. At the latter place the rich ores of the Parapara ironstone deposits are drawn on, and the ore ground, both raw and after being calcined, different colours resulting.

Knife-polish is also made at Parapara by grinding a felspathic rock.

In Southland, hæmatite is being got at Mataura and used for colouring purposes at the Mataura Paper-mills.

Iron.

Operations for the working of the ironsands of Taranaki and the ores at Parapara have not commenced.

Petroleum.

Some boring for petroleum was undertaken during the year at Kotuku (in the vicinity of Lake Brunner), between Otira and Greymouth. Oil in small quantity has been obtained. Although no active work is now in progress, I understand the matter of further investigation as to the possibilities of the district is not being altogether left in abeyance.

Rock Phosphate.

The output of this mineral shows a steady increase. During last year the production at the quarries at Clarendon and Milburn (Tokomariro District, Otago), was about 4,400 tons. Its value for the preparation of a fertiliser is apparently well established.

SCHOOLS OF MINES.

The instruction given at these institutions is of considerable benefit to young men preparing to take positions in and about mines and batteries.

An examination, open only to students at the several schools of mines, is held annually in December. Scholarships, tenable for three years at the Otago University, Dunedin, together with a grant of £50 per annum, are available to those competing students who comply with the conditions under which these scholarships are granted.

THAMES SCHOOL OF MINES.

The Director, Mr. O. Gore Adams, A.O.S.M., F.C.S., reports as follows :—

Despite the general depression existing on the Lower Thames Goldfield, the attendance at the Thames School of Mines has been kept up to a satisfactory average.

During the year a special grant from the Mines Department, as mentioned in my last annual report, enabled the Council to purchase an optical lantern with electric arc lamp, half-plate camera, lantern-slide maker, and all accessories. A number of lantern-slides have been made illustrating metallurgical, mining, geological, electrical, and other subjects, and these slides are now used to illustrate the lectures given to the students. This is a great advantage, saving time and giving a correct representation of many objects that it would be impossible to draw properly on the blackboard.

The various subjects taught and the scope of the work are indicated by the following summary of classes.

Subjects of Instruction.

Mining and Applied Mechanics.

Mining.—Characteristics, mode of occurrence, and distribution of the usual minerals; classes of ore-deposits; faults; recovery of lost lodes; shaft-sinking and driving levels; dry and wet ground; timbering shafts, levels, and inclines; underground workings.

Mine-drainage.—Surface-water; dams; force-pumps; lift-pumps; steam-pumps; pumping-engines; capacity of pumps; thickness of pipes; calculation of water-power.

Explosives.—Composition and strength; mode of charging boreholes and firing; products of combustion; calculation of quantities.

Ventilation.—The atmosphere; natural ventilation; artificial ventilation; furnaces, fans, &c.; division of air-currents; composition and detection of noxious gases.

Hauling and Winding.—Strength of ropes; aerial haulage; underground haulage; roads, rails, and guides; safety appliances; man-engine; turbine; Pelton-wheel; steam-engine; winding-engine, and signalling.

Land and Mine Surveying.

Land-surveying.—Chains and tapes; ranging lines; adjustments of theodolite, dial, and level; chaining; offsets; reduction of slope-measurements; inaccessible points and obstacles to alignment; triangulation; measuring base-line; shape of triangles; tie-lines.

Mine-surveying.—Connecting the underground with the surface meridian; magnetic variation; correcting the magnetic survey; holing.

Levelling.—Recording levels; grading roads, tramways, and water-races; Abney level; calculation of earthworks.

Office-work.—Computation of co-ordinates, areas, and triangles; use of logarithmic tables; scales; methods of plotting survey; construction of survey-plans; principle and use of slide rule; principle of calculating-machines.

Metallurgy of Gold and Silver.

Ore crushing and pulverising machinery; rock-breakers; stamps; rolls; Huntingdon mill; arrangement of battery; sampling; drying and roasting furnaces; dry and wet crushing; classifiers; concentration; amalgamation on copper plates and in pans; chlorination; cyanide treatment and other leaching processes; treatment of slimes; agitation; filter-presses; smelting; fluxes and slags; cupellation; refining bullion; retorting and smelting of bullion; calculation of results obtained in the battery; metallurgical problems.

Practical Assaying (Dry).

Dry Assaying.—The furnaces and assay appliances; the fuels and fluxes; methods of sampling; preparation of the ore-sample; fusion and cupellation; parting; weighing and valuation of the bullion; sources of error in fire assaying; assay of litharge and red-lead; assay of gold and silver ores; assay of bullion; refining of base bullion; assay of lead-ores; assay of tin-ore; retorting and melting of bullion; volatility of gold and silver; preparation of pure silver and gold; calculation of results obtained in batteries from treatment of ore; keeping note-books and forms of assay reports; the valuation of specimens.

Practical Assaying (Wet).

Wet Assaying.—Preparation and use of reagents; tests for purity; use of apparatus and balances; assay of iron-ores, of copper, lead, zinc, antimony, bismuth, mercury, manganese, nickel, cobalt, arsenic, chrome-iron, and silver ores; assay of slags; assay of sulphur in fuels; assay of ash and coke in fuels; assay of lime in limestone; assay of cyanide-solutions.

Practical Chemistry.

Junior Class.—Preparation and use of reagents. Tests for purity. Use of apparatus and balances. Separation of the metals into groups. Qualitative tests for the different metals. Separation of silver, lead, mercury; separation of copper, bismuth, arsenic, and antimony; separation of iron and alumina, iron and zinc, iron and manganese, iron and chromium; separation of calcium and magnesium; separation of barium, strontium, and calcium; separation of potassium and sodium. Qualitative tests for the acid-radicals (inorganic)—(*a*) H_2S, HCl, HBr, HI; (*b*) HNO_3, $HClO_3$; (*c*) H_3BO_3, H_2Co_3, H_2CrO_4, HF, H_3PO_4, H_4SiO_4 H_2SO_4, H_3AsO_4.

Senior Class.—Estimation of chlorine; estimation of sulphuric acid and sulphur; estimation of phosphoric acid. Analysis of limestones and calcareous freestone; analysis of coals, coke, charcoal, and shales; analysis of barytes; analysis of fluor-spar; analysis of scheelite and wolfram; analysis of rocks (including estimation of K_2O and Na_2O); analysis of fireclays; analysis of soils; analysis of complex sulphide ores; analysis of milk; analysis of waters; analysis of bone-dust and bone-ash, with estimation of nitrogen; analysis of guanos and apatite; analysis of superphosphates. Estimation of alcohol—(*a*) by weight; (*b*) by volume. 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 ($Na_2S_2O_8 + 5H_2O$).

Theoretical Chemistry.

Mechanical mixtures and chemical compounds. Melting and boiling points. Elementary and compound substances. Laws of chemical combination. Equivalent weights. Multiple proportions. The atomic theory. Atoms and atomic weights. Molecules and molecular weights. Volume and density. Chemical symbols, formulæ, and equations. Specific heat. Diffusion of gases. Electrolysis.

The history, occurrence, preparation, properties, and uses of the elements, and their compounds—viz., hydrogen, oxygen, nitrogen, chlorine, bromine, iodine, fluorine, sulphur, phosphorus, arsenic, antimony, carbon, boron, silicon, sodium, potassium. Calculation of problems.

General and Mining Geology.

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; volcanic action; earthquakes.

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.

Crystallography.—The six systems, their axes, typical and modified forms; holohedral and hemihedral forms; twin crystals; use of goniometer.

Systematic Mineralogy.—Physical properties—hardness, specific gravity, cleavage; optical properties—reflection, refraction, polarisation, phosphorescence, lustre; chemical properties and composition; isomorphism and pseudomorphism; distribution and paragenesis of minerals; classification.

Descriptive Mineralogy.—Description of the chief varieties; mode of occurrence; distribution in New Zealand; value.

Blowpipe Determination.—Use of the blowpipe; oxidizing and reducing flames; examination of mineral samples.

Mathematics.

Arithmetic.—The simple rules; weights and measures; vulgar fractions; decimals; proportion; problems; logarithms; mensuration.

Algebra.—The signs and symbols; simple rules; factors; symmetry; problems; quadratic equations; simultaneous equations; binomial theorem: transposition of formulæ used in mining.

Trigonometry.—Definition of an angle; trigonometrical ratios; easy problems; solution of triangles.

Euclid.—The first four books of Euclid, with definitions, axioms, and problems.

Drawing.

Geometrical Drawing.—Use of scales and instruments; plane geometrical figures; projection; isometric drawing.

Mechanical Drawing.—Machine drawing to scale from copies and from the machines, showing plan, elevation, and sections; tinting; shading; inking-in; figuring and lettering; enlarging and reducing; preparation of working-drawings, and tracings on paper and cloth.

Architectural Drawing.—Preparation of working-plans and finished drawings.

Practical Astronomy.

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.

Petrology.

Preparation of thin rock-sections; use of the polariscope; identification of minerals in thin sections; drawing and photographing of sections. Theory of light; ordinary and extraordinary ray; polarised light; positive and negative crystals; uniaxial and biaxial crystals; interference figures, &c.

A grinding-plate and polarising microscope are provided by the school.

Saturday Science Lectures.

Fundamental ideas of matter. Gravitation. Mechanical powers. Friction. Pressure of liquids and gases. Specific gravity. Heat, sound, and light. Magnetism. Electricity. Chemistry. Physiology and health.

Physics.

Heat.—Change of volume, measures of temperature; change of state, latent heat, hygrometry, specific heat, calorimetry; sources of heat, the conservation and dissipation of energy; convection, conduction; reflection, refraction, transmission, and absorption of radiant energy. Use of thermometer, barometer, hygrometer; determination of the density of solids and liquids; calculation of the density of gases from observations of their temperature and pressure; calorimetry.

Sound.—The production and propagation of sound; the vibration of sounding bodies; the elements of the physical theory of music.

Light.—Nature, production, and propagation of light; the laws of reflection and refraction at plane and spherical surfaces; prismatic dispersion and spectra; interference, double refraction, and plane polarisation; the principal optical instruments, and vision. Use of goniometer, photometer, spectroscope, telescope, and microscope; determination of the curvature, focal length, and magnifying power of lenses; determination of the refractive index of solids and liquids.

Static Electricity.—Fundamental phenomena of attraction and repulsion, conduction, induction, and distribution, electrostatic units; electrical machines; condensers.

Magnetism.—Fundamental phenomena of magnetic attraction, repulsion, and induction; magnetic units; terrestrial magnetism.

Current Electricity.—Voltaic batteries; galvanometers; electrolysis; Ohm's law; thermal effects of the electric current; electro-magnetic units; the interaction of magnets and currents, and the mutual action of currents upon one another; thermo electricity; induction of currents; magneto-electric and dynamo-electric machines. Use of electrometer, galvanometer, voltameter, Wheatstone's bridge, and resistance-coils; determination of the resistance of conductors and batteries; determination of the electro-motive force of batteries, and of the strength of currents; measurement of magnetic forces.

Mechanics and Hydrostatics.

Composition and resolution of forces acting on a point, and on a rigid body on one plane; the mechanical powers; the centre of gravity; the fundamental laws of motion; the laws of uniform and uniformly accelerated motion and of falling bodies; the pressure of liquids and gases; the equilibrium of floating bodies; specific gravities, and the principal instruments and machines the action of which depends on the properties of fluids.

Syllabus for Electrical Class.

The syllabus comprises a complete course for the City and Guilds Examination in electrical engineering, and includes the following subjects:—

General notions about electro-motive force, current, resistance, and the principles of electric circuits, simple and branching; the electro-motive force required to produce a given current in a wire of given resistance; electric batteries, their construction and adaptation for commercial uses; simple principle and use of electric measuring instruments; ammeters, voltmeters, delicate mirror galvanometers, resistance-coils; the induction of currents by the motion of magnets; notions about magnetic lines of force; the induction of currents by action of currents in neighbouring circuits; the effect of iron; induction-coils and transformers for alternate currents; simple principle of motors and of electro-magnetic mechanism; the magnetic drag on wires carrying currents; glow-lamps and arc lamps, their arrangement in parallel and in series; the necessary parts of arc lamps and their action; the relation between mass, weight, and force; relations between heat and work; relation between the watt, the kilowatt, and the horse-power; watt meters; systems of wiring houses; methods of jointing; general knowledge about conducting and insulating materials and their mechanical and electrical properties; meaning and calculations of drop; methods of testing installations.

If any student wishes to sit for examination in telephony or telegraphy he may do so by making arrangements with the lecturer.

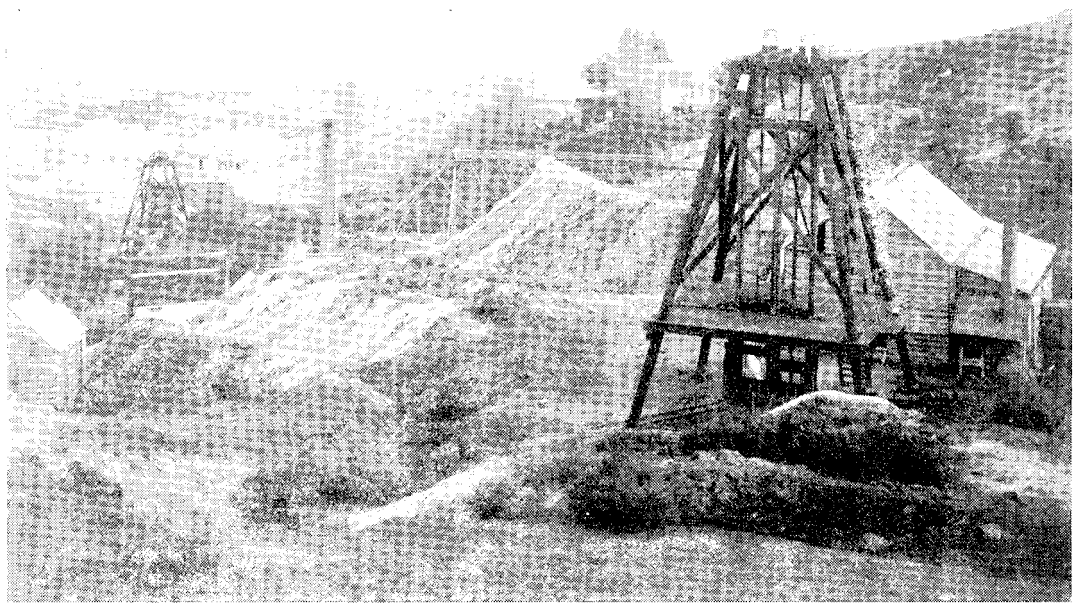
The attendance for the past year is as follows:—

	First Term.	Second Term.	Third Term.
Registered students	33	30	30
Saturday science classes	61	59	44
Total students	94	89	74

Being an average of 31 registered students, 54 Saturday science pupils, and 85 of a total.

The examination results for the year 1903 were very good, taking into consideration the lack of active mining and consequent depression existing on these goldfields. Thirty-four students sat, sending in 68 papers, including 18 from the Saturday science class. Fourteen first-class, 18 second-class, and 22 third-class certificates were gained.

The examinations were supervised by myself and staff.



WAIOTAHI MINE, THAMES.

WAIOTAHI BATTERY, THAMES.

The examination results are appended:—

RESULTS OF UNIVERSITY SCHOLARSHIPS AND SCHOOLS OF MINES EXAMINATIONS.

Name of Student.	Practical Chemistry (Senior).	Practical Chemistry (Junior).	Theoretical Chemistry (Senior).	Theoretical Chemistry (Junior).	Theoretical Chemistry, Elementary.	Practical Assaying (Senior).	Practical Assaying (Junior).	Practical Assaying, Wet (Senior).	Practical Assaying, Wet (Junior).	Mineralogy.	Metallurgy of Gold and Silver.	Mining.	Ventilation.	Pumping and Winding.	General and Mining Geology.	Land and Mining Surveying.	Mathematics.	Mechanical Drawing.	Explosives.	Electricity.
H. M. Clark	8	..	..	41	..	55	..	37	..	..	63	53	66	18	47	21	27	70	51	53
L. Andrew	..	78	..	85	..	..	..	..	..	..	71	74	47	55	76	69	79	66	68	..
L. Kitching	..	72	..	52	..	70	..	..	46	..	56	..	..	..	..	..	41	..	..	..
L. Maddern	..	73	..	..	..	77	..	..	..	..	..	..	..	..	..	..	..	..	..	..
H. R. Jury	31	..	..	..	..	48	..	..	..	..	..	..	..	..	..	..	..	..	..	..
G. L. Thorburn	..	..	..	..	..	..	49	..	..	..	..	..	..	..	..	..	..	..	..	..
Allan Baker	..	..	..	..	..	..	35	..	..	..	..	..	..	..	..	..	..	..	..	..
L. Adams	..	..	..	..	..	..	64	..	..	..	..	..	..	..	..	..	..	..	..	..
A. Price	..	..	..	..	..	..	42	..	..	..	..	..	..	..	..	..	..	..	..	..
A. P. Alexander	..	..	..	..	..	..	20	..	..	..	..	..	..	..	..	..	..	..	..	..
Young Booker	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	77	41	36	..	..
P. Lavery	..	..	..	..	..	..	..	..	..	..	..	..	48	..	..	17	..	..	43	..
C. Purnell	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	61	..	..
W. Smith	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	39
T. Mangan	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	53
J. Horn	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	46
H. Lowe	..	..	..	..	18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
M. O. Johnson	..	..	..	..	32	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Nellie Wylie	..	..	..	..	51	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Annie Wylie	..	..	..	..	19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
S. Grigg	..	..	..	..	43	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
H. Baker	..	..	..	..	20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
E. G. Ellis	..	..	..	..	26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
N. Wright	..	..	..	..	71	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
A. B. Floyd	..	..	..	..	80	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
P. Williams	..	..	..	..	38	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
G. Warne	..	..	..	..	27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
M. Grigg	..	..	..	..	22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
O. Wright	..	..	..	..	40	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
J. C. Paul	..	..	..	..	37	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
W. Danby	..	..	..	..	26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
J. P. Rickard	..	..	..	..	21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
E. Clarke	..	..	..	..	64	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
J. G. Poulgrain	..	..	..	..	58	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

The maximum number of marks was gained by L. Andrew, who accordingly won the President's gold medal. This student well deserves his success, for he follows his daily occupation from eight till five, and attends the School of Mines in the evening. This is an example of what can be done by a young man anxious to get on. I am pleased to state that the Council have recognised his merit in a fitting manner, by awarding him a scholarship to this school for 1904, of the value of his school fees.

The students have shewn a disposition to take a greater number of subjects this year. This is as it should be, for the fully trained man is the man most in demand. Those who study but one or two subjects can never hope to compete against those who have been trained in all branches of their particular work.

The Saturday science class has been well attended. Eight prizes were awarded to pupils who attended every meeting of the class, and the first and second prizes were awarded to A. B. Floyd, 80 per cent., and N. Wright, 71 per cent., respectively.

BATTERY AND ASSAYING DEPARTMENT.

Nine parcels of ore were treated in the experimental plant during 1903. Two were treated by cyanide, six by amalgamation, and one lot crushed and not further treated. The small number of parcels put through is due to the absence of active prospecting in the district. None of the lots calls for special comment.

In addition to the assays made in connection with the ore treated in the battery, 165 public assays were made. The following are details of some of the more interesting:

3047/2, from Ohiwa B.P.—These two specimens were sent to be tested for cinnabar, but on testing proved to be merely jasper.

3048/1, from Maratoto.—A carbonaceous shale.

3049/1, Tararua Ranges, near Masterton.—A vanadium-ore for analysis. The highest per centage from the samples was 0·1 per cent. vanadium.

3077/1, near Huntly, Whangape.—Coal for analysis. Result: Moisture, 15·2 per cent.; hydrocarbons, 33·5 per cent.; fixed carbon, 49·6 per cent.; sulphur, 0·34 per cent.; ash, 1·7 per cent.: ash, reddish-brown colour.

3080/1.—A gold railway pass, sent by New Zealand Railways to be assayed. Result: 62·75 per cent. gold, 9·2 per cent. silver, 28·0 per cent. copper: This is equivalent to 15·06 carat.

3083/1, Kaihu, Northern Wairoa.—Consisted of iron-pyrites, replacing wood. Of no value except as a specimen.

3085/1, Thames District.—Gold, 6 dwt. 7 gr. per ton; silver, 18 oz. 5 dwt. 11 gr. per ton; value, £3 1s. 9d. per ton, approximately. Copper, nil; lead, trace; iron, 1·31 per cent.; sulphur, 1·86 per cent; tellurium, nil.

3088/1.—An island near Upolu was the source of this specimen, which turned out to be metallic zinc. It was stated to occur in this island in volcanic rocks, but it is very doubtful if it is of natural occurrence.

3106/1, from the borehole, Kuranui Caledonia Gold-mining Company, Thames: quartz stringers and country from between 1,000 ft. and 1,100 ft. depth.—Assayed 7 gr. gold per ton, 6 dwt. 17 gr. silver per ton; value, 1s. 9d. per ton. This sample was not a core from a reef, but from mere stringers of quartz. It indicates the presence of gold at that depth, and being such a small sample cannot be considered as a proper indication of the value of the quartz.

3116/1, Manganese-ore for analysis.—Total manganese, 57·5 per cent.; manganese as manganese-dioxide, 39·3 per cent., equal to 62·2 per cent. manganese-dioxide. It is the manganese existing as the dioxide which is available for the making of chlorine and for other uses.

3119/1, from the borehole, as 3106/1.—Of the same description as 3106/1. Assayed, gold, 2 dwt. 19 gr. per ton; silver, 2 dwt. 5 gr. per ton: value, 11s. 4d. per ton.

3123/1, Waiomo district.—Gold, 6 oz. 11 dwt. 2 gr. per ton; silver, 86 oz. 2 dwt. 18 gr. per ton: value, approximately, £34 16s. 7d. per ton.

Museum.

This is very well stocked with minerals, rocks, and mining exhibits. Several valuable specimens have been added to it during the year. It is open every Thursday afternoon from 2 to 4; and at all reasonable times will be thrown open for visitors to the district.

Governing Body.

At the annual general meeting of subscribers held at the school at 8 p.m. on the 16th February, 1904, the following officers were elected: President, Mr. Matthew Paul; Vice-president, Mr. W. Baker; Treasurer, Mr. E. F. Adams; Members of Council—Messrs. G. S. Clark, George Comer, John Ensoll, H. D. Haszard, Henry Lowe, and E. F. Murphy. Mr. Albert Bruce is permanent honorary secretary.

I have much pleasure in thanking the Council for their cordial support during the year, and the assistance they have given me in furthering the interests of the school.

Staff.

There have been no changes in the staff during the year, but Mr. E. G. Wright, temporary electrical instructor, has been appointed instructor for both the Waihi and Thames Schools, and will devote half his time to each during 1904. The staff, consisting of Mr. A. H. V. Morgan, M.A., assistant lecturer; Mr. E. G. Wright, instructor in electricity; Mr. T. J. Mountain, licensed surveyor, drawing-master, have all performed their duties in a very efficient manner, and I wish to express my thanks and appreciation of this and of their zeal.

As usual, students have been taken trips by myself down mines, also on visits of inspection to batteries and pumping and winding plants in the district.

COROMANDEL SCHOOL OF MINES.

Mr. D. V. Allen, A.O.S.M., Director.

The annual report is as follows:—

The annual meeting of the Coromandel School of Mines was held in the lecture-hall, on Friday evening, the 12th February, 1904. There was a very fair attendance, T. W. Rhodes, Esq., J.P., presiding.

Report of the Council.

The Council submitted the following report upon the past year's work:—

During the past year the efficiency of the school has been increased generally, and results compare favourably with previous years. The curriculum embraces all the subjects specified by the Mines Department as essential for the several examinations in scientific mining, and the institution is replete with all necessary apparatus and appliances for instruction in the several branches. The results of both the school and the mine-managers' and battery-superintendents' examinations are very gratifying, and are proof of aptitude, attention, and regularity of attendance on the part of the students. During the year, the Council have, with the assistance of the Mines Department, been enabled to erect a grinding and facing plant, which is very advantageous in the classification of geological specimens; the plant is enclosed in a separate building, the necessary power being provided by a Pelton-wheel, connected with the county water-supply. An additional mineral-case has been affixed in the lecture-hall; the drainage scheme has been completed and sundry additions have been made. The Visiting Committee's monthly reports have remarked favourably upon the working of the school and the deportment of the students. Instruction in electricity and magnetism has been commenced this session, and the students are showing a keen interest in the subjects; the Council interviewed the Minister of Mines, and he agreed to assist in providing the apparatus, thus enabling the class to be started with the necessary equipment. During the year it will be necessary to replenish the stock of chemicals and other materials, so essential in carrying out the full course of instruction, which will entail considerable outlay; in this connection, the Council desire to urge upon the public the expediency of according a larger measure of financial and moral support to the institution. The public battery has had a record year, thirty-seven parcels of ore having been treated during the twelve months, being an increase of fifteen upon the preceding period. The Council, with a view to increasing the usefulness of

the plant to prospectors and others, have in view a scheme to supply increased motive power at a proportionately reduced cost, and have interviewed the Minister of Mines upon the question, with the result that financial assistance has been promised; when the scheme is carried into effect it will enable a further reduction to be made for the treatment of ore.

Director's Report.

The Director (Mr. D. V. Allen) read his annual statement, as follows:—

The school has been well attended throughout the year, the average attendance being the largest we have had for three years. Early in the year some of our members formulated a scheme for increasing the attendance, generously donating sufficient money for the free tuition of eleven students who were selected by competitive examination. This acted as the necessary impetus—others enrolled until finally we had some thirty students. The following are the details for the three terms:—

Term.	Number of Students.	Average Attendance.
First	28	58
Second	30	61
Third	29	60

Generally speaking, students attended regularly and took considerable interest in their work. Our course for the year included instruction in the following subjects—viz., mathematics, land and mine surveying, mining, wet and dry assaying, theoretical and practical chemistry, metallurgy, and mechanical drawing. During the first term a class in geology was commenced but owing to lack of attendance was subsequently discontinued. The two best-attended classes were theoretical chemistry and mathematics. A good deal of useful work was done in the laboratory and assay-room, while the practical survey class did good field-work. At the annual examinations for schools of mines, sixteen of our students presented themselves and five first-class, nine second-class, and six third-class certificates were obtained. In this connection I would point out the want of uniformity existing at the several schools of mines in the matter of awarding marks. Our school has always taken 75 per cent. as necessary for a first-class pass. Last year one student passed for first-class mine-manager and two for battery-superintendent. For this year's examination we have four candidates for first-class mine-manager and one for battery-superintendent. The sphere of usefulness of the school has been increased by the erection of a grinding plant for preparing rock-sections. The power is supplied by a 12 in. Pelton-wheel, the water being supplied by a 2 in. pipe at a standing pressure of 80 lb. per square inch, diameter of nozzle $\frac{3}{8}$ in., speed of wheel 1,500 revolutions per minute. The whole plant is contained in a substantial building. All that is now required is a good petrological microscope for examination of sections. In conclusion I am pleased to state that the outlook for the present year is assuring. Considerable interest is being evinced in the class on electricity, eleven students having already joined this class alone.—D. V. Allen, A.O.S.M., Director.

Public Battery.

The battery has been well patronised during the year. Altogether thirty-seven parcels of ore were treated, which constitutes a record. These represented 68$\frac{3}{4}$ tons of general ore, 813 lb. of picked stone, and 30 lb. of slag. The total yield was 691 oz. of bullion, valued approximately at £2,050. This is satisfactory, and goes to show that a much-needed want has been supplied by the erection of a public battery in this district. I understand that the Minister of Mines will favourably consider any reasonable scheme for increasing our motive power. The accomplishment of such a scheme would benefit our local mining community considerably. Prospecting would be encouraged, for our crushing-charges would then be so moderate that parties could treat ore at a profit which previously would not pay. The oil-engine on the whole worked well, notwithstanding its heavy work. I have again to acknowledge the valuable services of Mr. H. Macdonald, our amalgamator, who has carried out his rather onerous duties in a satisfactory manner.—D. V. Allen, Battery-manager.

Balance-sheet.

The balance-sheet shows a credit balance of £7 2s. 11d. on the School Account, and a similar one of £3 9s. 11d. on account of the public battery.

Election of Officers.

The election of officers resulted as follows: President, Mr. T. W. Rhodes, J.P.; Vice-Presidents, Captain Hodge and Mr. A. N. Jamieson; Secretary and Treasurer, Mr. W. Thomas; Auditor, Mr. A. F. Steedman; Councillors—Messrs. John Reilly, B.A.; J. B. Rockliff, J.P.; H. P. Hornibrooke; H. Battens, M.E.; E. A. Daldy; W. Jones, and G. T. Mellars.

Presentation of Certificates.

The certificates won by students at the examination in December last were presented as follows: E. McMillan—Ventilation, first-class; explosives, first-class; mining, second-class; pumping and winding, second-class. John Carroll—Ventilation, first-class; surveying, second-class; explosives, third-class. T. Cummings—Surveying, second-class. W. J. Patterson—Metallurgy of gold and silver, first-class. Victor Denize—Assaying (senior), second-class; chemistry, third-class. R. E. Jamieson—Assaying (senior), third-class. Vincent Daldy—Assaying (junior), third-class. G. Antwis—Assaying (junior), second-class; chemistry, second-class. Sydney James—Chemistry, first-class. Ransom Myers—Chemistry, second-class. Eric Rhodes—Chemistry, second-class. W. Turner—Chemistry, second-class. Herbert Jones—Chemistry, third-class.

Votes of Thanks.

Votes of thanks were accorded to the Director (Mr. D. V. Allen), the President (Mr. T. W. Rhodes), the Secretary (M. W. Thomas), the Auditor (Mr. A. F. Steedman), and the Councillors for the past year.

Uniformity of Certificates.

After discussion it was resolved, That, with a view to securing uniformity of certificates, the Mines Department be requested to prescribe the number of marks students require to obtain to entitle them to awards of respective grades, and to issue the certificates to the whole of the schools of mines throughout the colony. That the Councils of other schools of mines be requested to co-operate in this matter.

An Incentive to Study.

The President intimated that he would present a prize at next annual meeting to the student who showed the best progress for the year's work.

WAIHI SCHOOL OF MINES.

The Director, Mr. Percy G. Morgan, M.A., reports as under:—

As Director of the Waihi School of Mines, I have the honour to submit the following report for the twelve months ending the 31st December, 1903:—

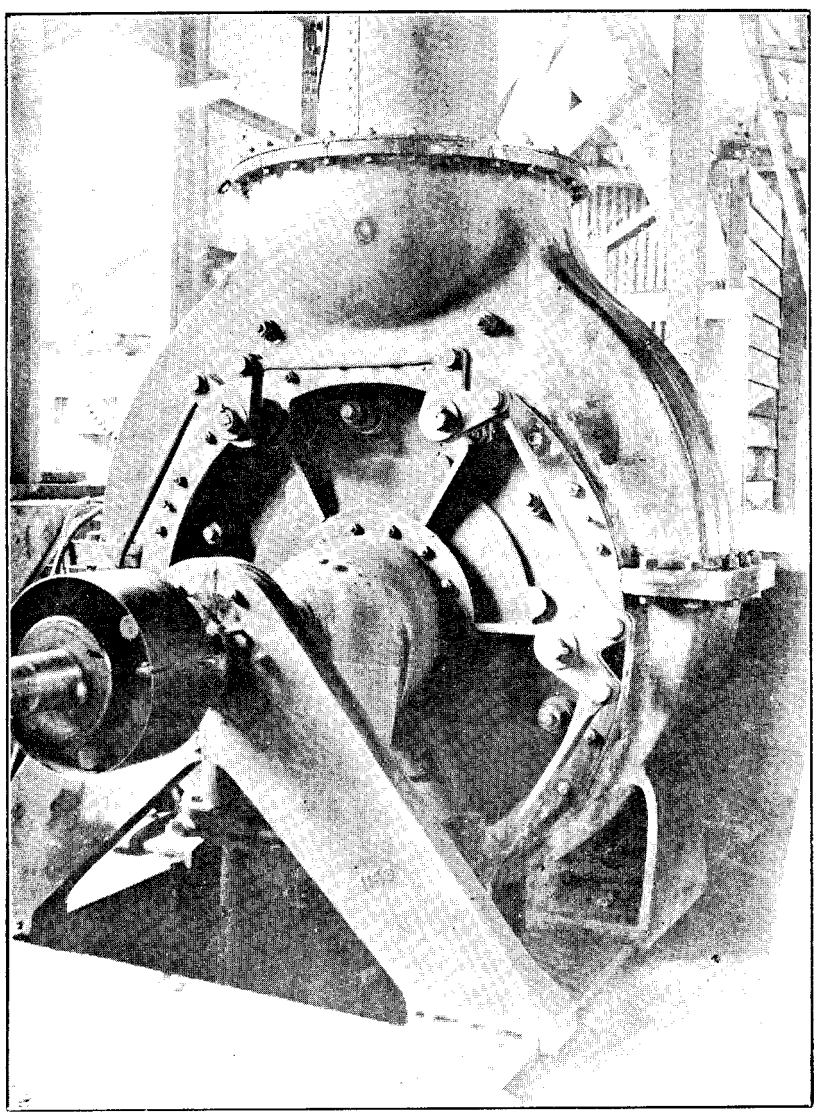
During the past year the number of students attending the school has been by far the largest for any year of its existence; the average attendance of registered students being sixty-eight, and the average class-attendance 195. For 1902 the average attendance was fifty-one, and for 1901 forty-seven. It will be seen, therefore, that the school is being more and more appreciated and utilised by the mining community of Waihi. As will be gathered from the subjoined table, nearly all the classes were well attended, the most popular being mineralogy, mathematics, electricity, assaying, and surveying.

Table of Attendances for the Year ending 31st December, 1903.

Name of Subject.	First Term.	Second Term.	Third Term.	Average.
Junior mining	6	10	7	8
Senior mining	8	6	5	6
Mathematics	26	35	20	27
Junior theoretical surveying	11	10	8	10
Senior theoretical surveying	11	6	5	7
Practical surveying	23	18	13	18
Geology	...	27	15	21
Mineralogy	35	...	...	35
Blowpipe	...	3	...	3
Junior theoretical chemistry	15	15	8	13
Senior theoretical chemistry	10	7	7	8
Practical chemistry	21	18	10	16
Wet and dry assaying	22	18	14	18
Metallurgy	8	9	4	7
Drawing	16	12	12	13
Electricity	...	28	22	25
Totals	212	222	150	195
Individual registered students	74	72	58	68

At the beginning of the year a large number of new students joined the school, and as most of the old students also resumed attendance, it was found necessary to carry on junior and senior classes in mining, surveying, and theoretical chemistry. As in former years, the lectures and instruction given in the morning were repeated in the evening, thus enabling students working on different shifts to obtain regular lessons in every subject. Under the circumstances, a great deal of extra labour accrued both to myself and to the assistant-lecturer, Mr F. T. Seelye. The somewhat limited school-accommodation was severely taxed by the increased attendance, and by the necessity of carrying on two and sometimes three classes simultaneously.

Examinations.—Eighteen students presented themselves at the annual School of Mines examinations held during December. Forty papers were given and the results just to hand show that twelve first-class, eighteen second-class and eight third-class certificates were obtained. Very few papers fell below 40 per cent., and only two failed to reach the minimum required for a certificate. In themselves, these results, especially if the disadvantages under which many students labour be taken into account, are very satisfactory, but it is to be regretted that a very large proportion of the students did not come forward for examination, and therefore their work remains untested. As a partial explanation of these students' absence it may be mentioned that one or two were unable to obtain leave of absence from their work, whilst others stated that they could not afford to lose several shifts in order to sit for examination. Others again, being new students, thought themselves too new to the work to come forward in even one subject.



100-HORSE POWER TURBINE, WAIKINO BATTERY, WAIHI GOLD-MINING COMPANY.

During 1903 two of our students obtained first-class mine-managers' certificates, one a first-class coal-mine manager's certificate, and two battery-superintendents' certificates. In all eighteen first-class mine-managers', two first-class coal-mine managers', and fifteen battery-superintendents' certificates have been obtained by students of this school during the past six years, besides a number of second-class mine-managers' certificates, winding-engineers' certificates, etc.

In connection with these examinations it is to be remarked that the standard required by the examiners for coal- and metal-mine managers is apparently raised higher year by year. In consequence it is now becoming very difficult for the ordinary working-miner to satisfy the examiners' requirements. The question as to what educational tests ought to be passed by a mine-manager is a difficult one, and it is not my intention to discuss it at the present time, but this I may say that I feel certain that any further raising of the standard, especially in the direction of asking questions that are outside the ordinary scope of the average mine-manager, will, under present conditions, quite debar many intelligent and experienced working-miners—really good "practical" men—from gaining certificates.

Laboratory.—During the year sixty-seven assays and determinations, mostly of gold and silver ore, were made for the public. In addition, a number of minerals, rock-specimens, &c., were examined and named free of charge.

Syllabus.—The course of instruction during 1903 was on very much the same lines as in former years. The introduction of senior courses in theoretical chemistry, mining, and surveying, enabled a higher standard to be attained in those subjects. In connection with the geological class some instruction in petrography and in the use of the polarising microscope was given. Several students did a fair amount of work in the direction of preparing thin sections of rock for microscopic examination. In May a class in electricity was started, and was well attended during the second and third terms.

Mineral Collection.—This has been very largely increased during the year by specimens of minerals, fossils, ores, and rocks. A good collection of natural crystals has been bought by the Council, whilst the members of the staff have collected a considerable number of rock-specimens from various localities. Among the numerous donors to the collection may be mentioned the following:—Mr. Thomas Gilmour.—Telluride-ore from Kalgoorlie, and other specimens. Waihi Grand Junction Gold-mining Company.—Diamond-drill cores, steel boring-crowns, fossil wood, &c. The Goldfields Diamond Drilling Company (Kalgoorlie).—Diamond-drill cores from Kalgoorlie, Coolgardie, &c. Mr. S. B. Hunter (Victorian Mines Department).—Calyx and diamond-drill cores from several Victorian localities. Mr. E. R. Green (Inspector of Mines, Otago district).—Rocks and fossils from Otago. Mr. F. Johnson (Taitapu, Nelson).—Specimens of gold-ore and chrome-iron from Nelson. Mr. F. T. Seelye.—Rocks and minerals from Dunedin and other Otago localities. Other donors of interesting specimens were: Mrs. Mathewson, Kokonga, Otago; Mr. W. E. Warburton, Johannesburg; Captain W. Newdick, Rhodesia; Mr. R. B. McDuff, Director, Karangahake School of Mines; Mr. D. V. Allen, Director, Coromandel School of Mines; and Messrs. Quick, St. Clair Heard, Gordon Cumming, J. Gilmour, E. G. Banks, W. Morrison, C. McLean, A. J. Graham, and W. Corbett, all of Waihi.

Petrological Microscope.—During the past year the want of a microscope for petrological work has been much felt. The Council of the Thames School of Mines kindly lent us their miscroscope for a few weeks, and towards the end of the year a microscope imported by myself was available for showing sections to the members of the geology class. Quite a number of our best students are anxious to take up petrological work, and for their benefit it is to be hoped that before long the Council will be able to procure a petrological microscope for the use of students.

Library.—This, as in former years, has been much used by the students. The Council has purchased a number of books, and the usual Government publications have been received. Thanks are due to Messrs. Gray Bros., of Auckland, for the gift of several valuable works on metallurgy and assaying.

Theodolite.—During the greater part of the year considerable inconvenience was caused by the lack of a theodolite which could be lent to students for survey practice, but this was remedied a few months ago by the purchase of a good second-hand transit theodolite.

Addition to Building.—Towards the end of the year the congestion caused by the large attendance induced the Council to undertake an addition to the school building. With the help of a Government subsidy a class-room 27½ ft. by 20½ ft. and a smaller room 20½ ft. by 13 ft. have been built on to the south end of the school, and are now ready for occupation.

Teaching Staff.—During the year there have been no changes in the staff, which consists of myself as Director; Mr. F. T. Seelye, A.O.S.M., assistant lecturer; Mr. R. H. Mitchell, drawing-master; and Mr. Staffard Clarke, laboratory assistant. Mr. E. G. Wright who has been appointed by the Government joint instructor in electricity to the Thames and Waihi Schools of Mines, begins his duties here after the summer vacation.

Office-bearers.—At the annual meeting of members of the school the following office-bearers were elected: President, Mr. Thomas Gilmour; Vice-President, Mr. W. H. Johnston; Hon. Treasurer, Mr. E. G. Banks; Members of Council—Messrs. A. T. Kenrick, Robert Morgan, Thomas Johns, A. B. Benge, C. Saunders (elected by subscribers); William Morrison, F. Stewart (elected by students). In addition to the above the Waihi Borough Council elected as its representatives Messrs. Arscott and Slevin. Later in the year Mr. Arscott's place was taken by Mr. J. Newth. Mr. Harry Allen, who had ably acted as Secretary for some years, resigned that position last April. In his place the Council appointed Mr. G. St. Clair Heard.

Conclusion.—For the coming year the prospects of the school are bright, and a large attendance at the various classes is anticipated. I have to thank the various members of the Council for the great help they have given me in carrying on the work of the school. My thanks are particularly due to Mr. Harry Allen, the late Secretary, and to Mr. G. St. Clair Heard, our present Secretary. Mr. F. T. Seelye, A.O.S.M., assistant lecturer, and Mr. R. H. Mitchell, drawing-master have ably acquitted themselves in their respective departments, whilst Mr. Staffard Clark has proved himself a capable laboratory assistant.

KARANGAHAKE SCHOOL OF MINES.

The Director, Mr. R. B. Macduff, reports as follows:—

I have the honour to furnish herewith the third annual report on the Karangahake School of Mines for the year ending the 31st December, 1903.

Attendance.—The attendance at the classes was not so good as was the case during last year. This was especially noticeable at the end of the year, but can be accounted for by the cessation of work at one of the mines and its battery, so that the average attendance was reduced to twenty-three students, taking an average of slightly over three classes per student; but I hope the classes will be better attended next year. There is no lack of young men in the district who could avail themselves of this branch of education were they inclined to do so.

Examinations.—This year was the most successful we have had since the opening of the school. The results of the examinations held by the Mines Department at the end of the year 1902 show that the students have done excellent work, gaining certificates as follows: Eighteen first-class, eleven second-class, five third-class. At the examination for mine-managers and battery-superintendents, held in January, 1903, eight students sat, two for mine-managers and six for battery-superintendents, and all of these students succeeded in passing.

Syllabus.—This was similar to that of former years, but some students did a little advanced work in their respective classes, and with good results. Next year it is intended to add to the syllabus a class in metallurgical chemistry, which shall include qualitative and quantitative analysis of battery-products such as ore, slimes, concentrates, sands, amalgam, slags, &c., as well as the testing of ores for acidity, the causes of loss of KCy during treatment, assay of KCy solutions for gold, silver, zinc, &c. This class should greatly benefit battery hands.

It is also intended to start a separate class in elementary arithmetic, so as to give any one willing a chance to work up enough arithmetic to follow the other classes intelligently.

New Building.—Thanks to a grant from the Government, the size of the school has been doubled, and now the school comprises a large lecture-room, a reading-room, chemical laboratory, balance-room, and office, and the whole school is soon to be lighted with gas, which will also be used for heating purposes in the laboratory.

Governing Body.—The following gentlemen held office during the year: Patron, Mr. E. G. B. Moss, M.H.R.; President, Mr. D. P. Mitchell, M.E.; Vice-presidents, Messrs. F. Rich, B.Sc., G. N. McGruer, and E. Cartwright; Council—Messrs. H. W. Guthrie (Chairman), C. Tresize, T. G. Vinson, G. A. Chappell, A. Tomlinson, T. P. Heron, and R. D. Jones (Secretary and Treasurer). This Council has worked untiringly in their efforts to push the school to the fore.

Library.—During the year the library has been added to, partly by the Council and partly by gentlemen outside the school. In this respect I must heartily thank the Very Rev. Dean Hackett for two standard works on geology and assaying, and Messrs. McGruer and Rich for several books and papers. My thanks must also be extended to the Mines Department for all Government publications.

Mineral Collection.—During last year a good number of mineral specimens and rocks were added to the collection, but want of space has prevented their being displayed; but this has now been overcome, and any gentleman wishing to donate specimens to the school collection will receive the thanks of the Council by forwarding them to the school.

Assays and Analyses.—During the year six assays for gold and silver and sixteen analyses of iron-ore were done, besides the identification of a number of minerals for prospectors. This latter is done free of charge.

In conclusion, I must thank the Council for their co-operation in all matters pertaining to the advancement of the school; likewise all gentlemen who have kindly given books, specimens, &c., and also Mr. V. C. Dette, my laboratory assistant.

NELSON SCHOOL OF MINES.

The Instructor, Mr. W. F. Worley, submits the following report:—

I have the honour to report as follows upon School of Mines work done in Nelson for the year ending the 31st December, 1904:—

Blowpipe Analysis Classes.—These classes continue to do satisfactory work, but owing to the drafting of the senior boys of the town schools to the Nelson College as soon as they have passed Standard VI., the quality of the work is not equal to that of former years. In these classes twenty two boys were taught how to use the blowpipe for the identification of the ordinary ores of commerce. Beginners are allowed to practise on salts of the chief metals, but the testing of ores is the object aimed at. Second-year boys are put through a systematic course of testing unnamed substances. They have to record in note-books—(*a*) the physical properties of the substance given them to test, (*b*) the experiments they make with it, (*c*) the results obtained from these experiments, and (*d*) the conclusions they arrive at as to the composition of the substance. The results are then checked, and marks awarded for successful work. At the end of the year a certificate of proficiency is given to those whose work has been uniformly good. Testing for gold by panning off wash-dirt in a digger's dish also forms part of the instruction given.

Assaying.—During the year ten assays were made for the public. Some of these were to test the value of leaders of quartz found in the Maitai Valley, but the results were, I regret to say, not satisfactory.

Assaying Class.—Only one student attended this class, but he by his enthusiasm made up for lack of numbers. The course of instruction embraced the crushing and sampling of ores, the proper use of the balance, the fluxing of ores, the refining of bullion, and the estimating of the value of the ores per ton from the results given by the assay. More students could have been got for this class if my laboratory had been large enough to accommodate them. When the new technical school is opened here arrangements will probably be made for the teaching of chemistry and kindred subjects in connection therewith.

Conclusion.—Owing to my being sent to Reefton at the end of last October to take temporary charge of the school there, my blowpipe-analysis classes were curtailed by about six weeks. Advantage, however, was taken of my stay in Reefton to learn as much as possible about practical gold-saving; and my thanks are due to the managers of the mines there for the courtesy shown to me in allowing me to visit freely the mines and reduction-works. The knowledge thus gained will be useful to me here. My visit to Reefton also caused a projected lecture on agricultural chemistry to be abandoned, but probably two or three lectures upon that subject will be delivered during the present year.

WESTPORT SCHOOL OF MINES.

Mr. Sidney Fry, Hon. Director of the Westport School of Mines, reports as follows:—

From the beginning of the year up to the time of the appointment of the present Director, in the middle of the year, no regular classes had been carried on. We then made arrangements to carry on classes in mineralogy, theoretical and practical chemistry, and mine and land surveying under the instruction of the Director. A class in assaying was also instituted under the instruction of Mr. James Bradley, the President of the Committee.

From that time up till the present we have enrolled twenty students, some of whom attended for a time till the novelty wore off, and then ceased attending. There are also a few who attend in a desultory manner, but the remainder have settled down to earnest study and are already showing a marked improvement. The average attendance at the classes has been as follows: Mineralogy, 10·4; theoretical and practical chemistry, 10·4; land and mine surveying, 5·4; and assaying, 10·6.

Among the more advanced students are Messrs. K. Ross, R. Connell, and W. Gowans. The last-named student travelled in from Millerton every week for the purpose of attending the lectures in land and mining surveying, and has sat at the recent examinations, held at Reefton, for a first-class colliery-manager's certificate, with what result I am not yet able to report.

During the year we have done, in the course of experimental work and assays for the public, fifty-two fire assays for gold and silver, twenty-two assays of other metals (some of these being wet assays), and sixty-six analyses of coal from various parts of the world. Among a few of the most notable we may quote the following.

No. 1. Mineral filling cracks in Denniston coal.—Occurs in rhombic scales. Hardness, 2; lustre, dull; earthy to resinous; colour, white to brownish; yields water in closed tube; B.B. infusible, gives blue colour with cobalt-nitrate (aluminium); with micro-salt gives silica reaction, it is therefore Kaolin. (Analysis by the Director.)

No. 2. Sample of gold-bullion from the cleaning-up of the tail-race of the Rochfort Hydraulic-sluicing Claim. This, after cupellation was found to be brittle and to have a specific gravity of 19·7, and, on analysis, gave—gold, 90·8; silver, 0·7; platinum, 8·5: 100. (Analysis by the Director.)

Actuated by the impression, gained through reading the reports of Messrs. Cox, Binns, Park and McKay, on the geology and physical condition of the Parapara iron-ore deposits of Collingwood, that they would be favourable as a matrix of gold, the Director obtained a few samples of the ore, and on assay this proved to be the case, the ore being auriferous; but to what extent is not known yet, as no systematic sampling has as yet been done with it.

Mr. Kenneth Ross, an advanced student, has done some very useful work in the treatment, experimentally, with solutions of cyanide of potassium, of auriferous black sand and cement, in which the gold is not in a good physical condition for either amalgamation or for concentration on blankets. As a result of his investigations, and ultimate conviction that there is a great future before these deposits on the West Coast if treated in a scientific and extensive manner, he communicated with Mr. Thomas Edison, with a view to enlisting his interest in them, and thereby getting a trial of them by his new method of gold-saving from low-grade deposits. An encouraging reply was received to the effect that the engineer in charge of Mr. Edison's new invention was absent on an extended tour, examining placer-deposits, but that, as soon as he returned, the matter would be placed before him for consideration. Mr. Ross, in reply, said that he was confident that a visit to New Zealand by Mr. Edison's engineer would be productive of good results; and he also sent small samples of the auriferous sand. Whether or not this new method of treatment would be applicable to these deposits remains to be seen; but the fact is plain that we have enormous low-grade propositions in this district alone, which only await the time when we are sufficiently educated to treat them profitably, and I have no doubt that it would well repay the Government to assist such matters as the foregoing in the way of sending bulk samples away for treatment, and any other thing which might bring matters to a good issue. I have mentioned the matter to show the good the school is doing by educating practical men up to the point whence they may clearly see the possibilities lying around them, instead of looking away to some other part of the world where "distance lends enchantment to the view."

Mr. P. Bingham, Admiralty Inspector, has done a great many analyses of coal for sulphur during the year, as also has Mr. Bradley, who has also investigated the composition and properties of different samples of coal from various parts of the West Coast.

Towards the end of the year, the Director organized branch classes in Denniston under his own instruction, the subjects taught being mathematics, including arithmetic, algebra, plane trigonometry and use of logarithms, mining, under which head come mining geology, boring and sinking, mine working and timbering, haulage and drainage, and ventilation and mine-surveying. There is also a steam class for the use of those desiring to go up for engine-drivers' certificates.

These classes were really organized in July last, but as we could not get a number sufficiently interested to form a committee to work it as a school of mines the Director deemed it expedient to get it amalgamated with the Westport School of Mines, so as to give the students a higher

status. The total number of students enrolled during the time it has been in existence is fifteen, and the average attendance is eight. Some of the students are very diligent, and, we have no doubt, will give a very good account of themselves. Two of the students sat at the examination for engine-drivers' certificates a few weeks ago, and both passed.

We have pleasure in tendering our heartiest thanks to those gentlemen who have so generously helped to augment our collection of rocks, ores, and fossils, among the donors being Messrs. Tennent and Richards, Mines Inspectors; Mr. James Bradley; and Mr. A. McKay, Government Geologist, who kindly sent twenty-six specimens of representative New Zealand fossils, which have been labelled and will be displayed in a proper show-case.

Through the courtesy of Dr. Ohly, of Colorado, U.S.A., we obtained a good sample of monazite sand, and the Director also obtained samples of Australian monazite from Richmond district, New South Wales, and from Bonang in Victoria.

We have lately removed our apparatus into fresh premises, which are a portion of the old Courthouse, and though we are not yet fixed up properly are carrying on our work as heretofore. This building, though leaving much to be desired, is certainly an improvement on the premises just vacated.

It will be our endeavour during the present year to try and make arrangements for the issue of class certificates, as done in other schools of mines, in order to give students some encouragement by having a definite object in view in their studies.

REEFTON SCHOOL OF MINES.

The Director, Mr. J. Henderson, submits the following report:—

Mr. T. O. Bishop resigned the position of Director in August last in order to take up an appointment with the New Inkerman Company. I had carried on the work of the school for two months previous to my appointment in September. Owing to this the report is more or less incomplete.

The attendance during the year seems to have been about the average, with, as usual, a falling-off in the last term.

	On Roll.	Attendance.
First term	45	28
Second term	50	25
Third term	46	19

Classes were carried on during the year in chemistry, assaying (wet and dry), surveying, mining, metallurgy, and mechanical drawing.

At the annual examination only six students sat, but all did fairly well. The results are as follow: First class, 4; second class, 3; third class, 1. At last year's annual examination for mine-managers' and battery-superintendents' certificates a number (I have not the exact figures) of students sat. Of these one obtained a first-class certificate at once, and two more in the interim examination. This year four students are sitting for first-class certificates.

During the year ninety-seven samples were received for assay, chiefly quartz and tailings for gold; although bullion assays and assays for tin, copper, and silver were also made.

In conclusion I have to thank the Committee for their support, and especially Mr. Ashby, the Secretary, for his able assistance.

OTAGO SCHOOL OF MINES.

Professor James Park, F.G.S., the Director, reports as under:—

Diplomas and Certificates.

The mining school for the session ending the 7th November, 1903, showed the satisfactory attendance of thirty-two registered students, and two casual students for one subject only—namely, one in geology and one in surveying. Of the registered students, twelve entered for their first year, leaving twenty in their second, third, or fourth year, according to their academic standing. Three students in their final year completed their course in the divisions for which they entered; and one of these, having presented satisfactory certificates of time spent in mining operations, as required by Regulation 9, was awarded the diploma of Associate in Mining to which he was entitled. The successful candidate was Otto Albert Friedlander.

Diplomas and certificates were issued during the year to seven students who had passed the necessary class examinations prior to 1903, on the production of the necessary certificates relating to practical work, as follows:—Frank Hadfield Statham, (1) diploma of Associate in Mining, (2) certificate of Metallurgical Chemist and Assayer; William Ernest Barron, certificate of Land and Mine Surveyor; Stanislaus Charles Napier-Bell, diploma of Associate in Geology; James McGregor Wilkie, diploma of Associate in Metallurgy; Harold F. de Renzy Harman, diploma of Associate in Metallurgy; Claude G. L. Gregg, diploma of Associate in Mining; Kenneth Montrose Graham, diploma of Associate in Mining.

Annual Examinations.

The attendance in the different classes and the results of the annual examinations in the subjects of instruction in the mining school, as prescribed by the regulations for the different courses, are shown in the following tabulated statement:—

Subject of Examination.	Results.				
	Attendance.	First Class.	Second Class.	Third Class.	Failed.
General geology (senior)	2	1	...	1	...
General geology (junior)	10	1	3	4	2
Mineralogy (senior)	1	...	1	...	...
Mineralogy (junior)	8	3	4	1	...
Petrography (senior)	2	2	...	...	...
Petrography (junior)	4	1	3	...	...
Applied mechanics (senior)	7	4	2	1	...
Applied mechanics (junior)	11	3	7	1	...
Surveying (senior)	9	1	7	...	1
Surveying (junior)	4	2	2	...	...
Mining (senior)	6	4	2	...	...
Metallurgy (senior)	2	2	...	...	...
Metallurgy (junior)	5	2	3	...	...
Blowpipe analysis	6	2	3	1	...
Assaying (senior)	6	2	4	...	...
Assaying (junior)	6	3	2	...	1
Mechanical drawing (senior) ...	7	6	1	...	...
Mechanical drawing (junior) ...	5	1	1	...	3

The teachers of the subjects enumerated above were as follow : The Director—Mining geology, mining, surveying, applied mechanics ; Mr Waters—Metallurgy, assaying, blowpipe analysis ; Dr Marshall—General geology, mineralogy, petrography ; Mr G. Armstrong—Mechanical drawing.

Eighteen students in their first or second year, according to their standing, attended the University classes in mathematics, theoretical mechanics, theoretical physics, practical physics, theoretical and practical chemistry ; and three, qualifying for the requirements of the B.Sc. degree and for honours in geology, attended the class in palæontology. The results of the examinations in these subjects were as follow :—

Subject of Examination.	Results.				
	Attendance.	First Class.	Second Class.	Third Class.	Failed.
Mathematics	15	1	3	8	3
Theoretical mechanics	9	...	3	5	1
Theoretical physics	8	1	2	4	1
Practical physics	12	5	3	4	...
Theoretical chemistry	11	4	3	4	...
Practical chemistry	11	3	2	6	...
Quantitative chemical analysis ...	9	2	7	...	...
Palæontology	3	1	2	...	...

The teachers in the different subjects were as follow : Professor Gibbons—Mathematics ; Professor Benham—Palæontology ; Professor Shand—Theoretical Physics, practical physics, theoretical mechanics ; Professor Black—Theoretical chemistry, practical chemistry, quantitative chemical analysis.

Students in the different divisions, according to their standing, had to attend the drawing-classes at the School of Art. Mr Hutton, the Director, reported that the results were satisfactory in every case, as shown in the following tabulated statement :—

Subject of Examination.	Results.				
	Attendance.	First Class.	Second Class.	Third Class.	Failed.
Practical, plane, and solid geometry ...	10	5	3	2	...
Freehand and model drawing ...	2	1	1	...	...

Ulrich Medal.—This medal was awarded to George Dey, who secured a second class in mineralogy, and a second class in petrography.

Government Mining Scholarship.

Two students—namely, W. A. Given and Arthur R. Andrew—sat for this examination in December. The examination embraced eight written papers on senior mining subjects, and one paper on mechanical drawing. These students secured first place in six subjects—namely, mathematics, with 89 per cent. of possible marks; theoretical chemistry, with 82 per cent.; practical chemistry, with 75 per cent.; metallurgy of gold and silver, with 80 per cent.; mining, with 85 per cent.; land and mine surveying, 81 per cent. In mine-ventilation, with 81 per cent., A. R. Andrew tied with a Coromandel student for first place; and in geology, with 75 per cent., he was only one point behind a Thames student, who secured 76 per cent. of marks. The examination papers were set by the Government Board of Examiners on the curriculum of the Government mining schools, which is entirely different from that of the Otago University mining course. Our students having had no special preparation had thus to depend on their general knowledge of the subjects of examination. In the eight subjects enumerated above Mr. Andrew secured the high average of 80 per cent., but did not gain the scholarship, as he failed in mechanical drawing with 60 per cent.—that is, 15 per cent. below the scholarship requirements. Mr. Given secured the satisfactory average of 64 per cent. in the nine subjects of examination. Altogether, the results were eminently satisfactory.

Laboratory.

During the year fifty samples of ore were assayed for the public at schedule rates, and in the same period the Directors furnished reports of twenty-eight samples of rocks and minerals, for which no charge was made.

Donations.

The geological collections in the mining school were supplemented by a large number of fossils, rock and mineral specimens, presented by members of the staff and students. The school is also indebted to Messrs T. and W. Smith, of Sheffield, for a gift of "steel fractures," which will form a valuable addition to the technological exhibits for the class in applied mechanics.

Geodesic Station.

Towards the end of the session the much-needed transit railway theodolite and level arrived from the London makers, and in the few remaining weeks of the session a large block of concrete with an iron tube imbedded in it, was fixed on the top of Tana Hill, near the University, to serve as a geodesic observatory for our advanced students in surveying. Rounds of angles were observed at Flagstaff and Tana Hill late in October, but the cloudy weather prevailing in November prevented the reading of the angle at Signal Hill. Where the angles are completed, the latitude and longtitude of the new station will be computed in terms of the meridional station of the General Survey Department; and with a permanent referring-light fixed in a convenient place in the harbour, students will be able to check the meridional error of their traverses, and make observations for the determination of latitude and time. This work will be completed early in the session of 1904.

Mining Students' Association.

Considerable interest was shown in the proceedings of this Association, and during the session a number of interesting papers were contributed by past and present students on the scope and kind of mining and metallurgical operations that had come under the notice of the authors in their practical work during the preceeding summer vacation. Most of the papers were short and simple, with the proper thesis flavour, and a few showed much close and shrewd observation. The titles of the papers and the names of the authors are given below: "The Shotover Mining District," Mr. D. N. Tomlinson; "Mining prospects of Western Australia," Mr. W. F. Tomlinson, A.O.S.M.; "Kaitangata Coal-mine," Mr. W. A. Given, M.A.; "Treatment of Zinc Slimes," Mr. G. W. E. Turner; "The Gem Rocks of Kakanui," Mr. J. A. Thomson, B.Sc.; "A New 'Tippler' used for Fortification Coal-mines," Mr. A. R. Andrews, B.Sc.; "Taratu Coal-mines," Mr. W. Gibson; "Metallography," Mr. J. C. Neill; "Mine Creek Coal-mine," Mr. U. B. Inglis; "Milburn Phosphate Deposits," Mr. A. R. Andrew, B.Sc. In addition to these a paper was read by Mr. D. B. Waters on "Acetylene Gas," and one by the Director on "Some Base-level Planes of Erosion in New Zealand."

Domicile of Students.

The permanent homes of the students who attended the mining school during the session of 1903 were distributed throughout the colony as shown centesimally in the following table: Dunedin and suburbs, 34 per cent.; Otago (country districts), 9; Southland, 7; Canterbury, 18; Westland, 9; Wellington, 3; Hawke's Bay, 3; Auckland, 17: 100.

Associates of Mining School.

The School of Mines was established in 1878, but the graduate course was not inaugurated until nine years later, when three additional lecturers were appointed. The first diplomas were issued in 1887, and since that year 59 diplomas as Associate in Mining, 36 as Associate in Metallurgy, and 12 as Associate in Geology have been granted to 66 individual students who had completed the prescribed course and complied with the regulations relating to practical work. Of the 66 graduates, 35 took the diploma in mining only; 20 took diplomas in both mining and metallurgy; 4 took metallurgy only; 2 graduated in both metallurgy and geology; and 2 in geology alone. On the other hand, 9 graduated in both mining and geology, and 2 in mining, metallurgy, and geology.

Besides these diplomas, since 1887, 60 certificates as metallurgical chemist and assayer and 18 certificates as mine and land surveyor have been issued to 63 individual students. From these figures it will be seen that 35 students took the mining diploma only, while 4 took metallurgical only. On the other hand, the majority of the students who graduated in mining also graduated in

metallurgy. And there can be no doubt that these figures correctly represent the relative importance of mining and metallurgy. All our experience has shown that a mining engineer without a knowledge of metallurgy is poorly equipped and greatly handicapped in the practice of his profession. But metallurgy is only a branch of mining. It has not reached the dignity of a separate profession here as it has in Europe and the United States of America. The metallurgist is not a mining engineer, but a highly trained and specialised chemist.

The success of New Zealand mining graduates in Australia, Sumatra, Java, China, India, South Africa, Gold Coast, British Columbia, and United States has been very remarkable; and this success has followed, almost without exception, the possessors of mining diplomas.

The B.Sc. in Mining and Metallurgy.

The University of New Zealand grants a degree of B.Sc. in mining and a B.Sc. in metallurgy. The Universities of Melbourne, Sydney, and Adelaide grant only a B.Sc. in mining, which includes metallurgy; as also do the mining academies of Germany and France—of England, with one exception, and America, with two exceptions. The question arises, should New Zealand, which possesses no facilities for candidates acquiring a knowledge of metallurgical operations, excepting in the department of gold-recovery, continue to grant separate degrees in mining and metallurgy, while older countries where the facilities are almost perfect refuse to grant more than one; that is, the B.Sc. in mining, which in all cases covers and includes metallurgy?

The New Zealand B.Sc. in mining, including metallurgy, should be made, not a purely academic distinction, but the hall-mark of a professional occupation acquired by a successful apprenticeship in the lecture-room, laboratory, mine, and reduction-works. Its status would then be on all-fours with the New Zealand M.B. degree, which now takes a high place in the medical profession. The plums in mining are, perhaps, bigger and more plentiful than in any other profession. A four-years course of study and preparation is a splendid investment to any level-headed youth of grit and perseverance.

Practical Work during Summer Vacation.

According to the regulations of the mining school, candidates for diplomas are required to spend a certain time in obtaining practical experience as under:—(1) In the mining division at least twelve months, partly in metal and partly in coal mines; and of this period at least nine months must be spent in underground mining-work, and not less than four or more than six months in a coal-mine. (2) In the metallurgical division, at least twelve months in ore-dressing and metallurgical works. (3) In the surveying division, at least six months in the practice of mine and land surveying. (4) In the geological division, at least six months in the practice of geological surveying in the field.

For some years students have found an increasing difficulty in obtaining work in mines or mills, and in the divisions of surveying and geology it has been almost impossible to obtain the practical experience required by the regulations. Toward the end of the session the Director wrote to the Hon. James McGowan, Minister of Mines, pointing out the disability of Otago mining students in respect to practical work, and requested him to provide employment in the Government Departments for seven students in the summer vacation—namely, for two in the General Survey Department, two in the Public Works Department, two in the State coal-mines, and one in the Geological Survey.

The Minister approved of the suggestion, and courteously caused instructions to be issued to the several Departments to give the needed employment. Although the arrangement was made late in October, work was found for six students during the summer; and it is anticipated that when the Geological Survey is reorganized employment will be obtained for a greater number in future.

The Hon. Mr. McGowan for sixteen years or more has shown the keenest personal interest in all that relates to technical mining education, and among his many acts to promote the interests of mining schools none has been more warmly appreciated than the present.

Occupations of Old Students.

Among the appointments secured by old students during the year 1903 are the following: Mr. G. Geoffrey Sale, A.O.S.M., as first assistant to prospecting syndicate, Macequece, Portuguese Territory, South Africa, and afterwards manager of slimes-treatment works, Johannesburg; Mr. P. Fitzgerald, A.O.S.M., manager Golden Pah Mine, Western Australia; Mr. John Henderson, B.Sc., Director of the Reefton School of Mines; Mr. Otto Bishop, A.O.S.M., battery-superintendent New Inkerman Mines (Limited), Reefton; Mr. E. Paterson, A.O.S.M., general manager diamond mines, Brazil; Mr. T. Buteman, A.O.S.M, lecturer to the Kalgoorlie School of Mines, Western Australia; Mr. E. Edwards, A.O.S.M., assistant engineer of the Exploration Company (Limited), Blue Nile, Egypt; Mr. S. E. Napier-Bell, A.O.S.M., manager of the Brothers Home No. 1 Tin-mine, Derby, Tasmania. Besides these several have obtained appointments as assayers, amalgamators, and cyanide foremen.

Mining Education in Europe and America.

The character and results of mining education at the principal mining schools and academies in Continental Europe, England, and America have been much discussed during the past year or two. Broadly speaking, it was generally agreed that the graduates of the American mining schools excelled as mine-managers and mining engineers, the Germans as metallurgists, and the English as teachers and professors.

The curriculum of the Otago Mining School for a number of years was mainly modelled on the English system, and it is noteworthy that during this period the results, as shown by the occupations of the graduates, reflected the experience of the English prototype. The instruction was, perhaps, more academic than technical, and the students with their limited experience doubtless found that teaching was the only occupation that offered a prospect of lucrative employment.

But mining schools exist primarily for the training of mining engineers, and this objective is ever present in the mind of the governing bodies of the American and German mining schools. The defects of the Otago course have been removed, this having been effected by the system of practical work inaugurated by the late Director, and the revision of the curriculum adopted in 1901, which have brought the graduate course abreast of that of the leading American mining schools. The results have amply justified the more stringent and practical course now prescribed and enforced.

The mining school is not able to turn out trained mining engineers, but it prepares the graduates by a system of careful specialisation to be competent to occupy positions as assistant geologists, assistant mine-managers, mine-surveyors, mill assayers, and foremen of cyanide-works. It is in these occupations that the shrewd student accumulates the practical experience and knowledge of detail which afterwards form the foundation of his successful professional career.

A union of theory and practice has often, and rightly, been emphasized by many writers on technical mining education. A judicious union of the two is admitted to be necessary for a proper and intelligent understanding of any professional subject, but it should be borne in mind that theory and practice, although co-ordinate, are not necessarily equal.

In some subjects the theory dominates the practice; in others the practice dominates the theory. For example, in the extraction and recovery of gold from its matrix by solutions of potassic cyanide, a proper understanding of the theory is more important than the practice, which is largely mechanical and easily acquired. Conversely in assaying the theory is simple; but the practice—that is, the skill and precision necessary for the performance of assays that could form the basis of commercial valuations—can only be acquired by long and diligent practice in the laboratory.

Again, in the case of geology the theory and practice are alike simple and easy to acquire; but not every geological student, not even the brilliant student, is a potential geologist. To theory and practice must be added the geological faculty—a mental attitude or function not easily defined—which experience has shown to be rare, but, to some extent, capable of cultivation.

The relative value of theory and practice must be considered in each case, and the instruction so regulated that the one shall be the complement of the other.

It is believed that the success of American mining education is principally due (*a*) to specialisation and (*b*) to the employment of experienced professional men as teachers in the different departments of mining and metallurgy. It has long been recognised in the United States that the brilliant student without experience is of no value as a teacher in such professional subjects as mining engineering and geology.

The pre-eminence of German graduates in all departments of metallurgy is held to be due to three principal causes—namely, (*a*) judicious specialisation; (*b*) thoroughness of instruction in chemistry; and (*c*) the opportunities which students possess of obtaining practical experience in almost every class of metallurgical operation.

So far as New Zealand is concerned, mining students have no opportunity to engage in or even see the metallurgical operations connected with the production of iron, steel, copper, zinc, lead, silver, antimony, &c. And since information concerning these, imparted by lectures and text-books, must necessarily be unsatisfactory and to some extent superficial, special attention is devoted to the production of gold, which is the dominant mining industry of New Zealand, the Commonwealth of Australia, and South Africa, and the occupation in which the majority of the Otago graduates find employment.

German Mining School Examinations.

For a number of years it has been agreed that a written examination paper of some six or eight questions, in a technological subject covering a course of study extending over six months, is an unsatisfactory and inadequate means of ascertaining the knowledge and proficiency of a student in that subject. The Germans, with a view of increasing the efficiency of mining education, have lately introduced in their leading mining schools some radical changes in the conduct of the examinations for mining engineers.

Written examinations have now been relegated to a subordinate place. In view of the great extension of mining technology, it has been deemed advisable to divide the examination into two parts—namely, preliminary and final, the former being held at the end of the student's second year, and the final at the end of the fourth year.

Preparatory to the preliminary examination, the student, among other requirements, must submit two drawings and two freehand sketches of mining machinery or other appliances not too simple in character, and two simple essays or theses on appliances or methods with which the candidate has become acquainted in the course of his prescribed year of practical work. If these requirements are satisfactorily performed the candidate is put through a *vivâ voce* examination in the following subjects: Higher mathematics, physics, inorganic chemistry, mechanics relating to mining, and mineralogy. Failure in any one subject in the *vivâ voce* examination debars the candidate from passing, but he may present himself for re-examination in that subject at the end of three months. If a candidate fails in more than one subject all the subjects of examination must be taken again.

Candidates for the final examination must accompany their applications with satisfactory certificates of class attendance and practical work, and the following theses, attested by a declaration that they are the work of the candidate himself—namely, a geognostic description of some mining district or mineral deposit; a description of mining machinery, or of an electro-technical installation; a geodetic or surveying paper recording work actually performed by the candidate, with calculations, profiles, and full explanations; and a drawing of some complicated mining machinery or appliances, or a short description, sketch, and calculations of similar machinery of the candidate's own design.

When the examiners are satisfied with these preliminaries they will set the candidate a thesis on some mining subject, which must be completed in three months. This done, the candidate is put through a *viva voce* examination in geology, including palæontology, mining geology, mining surveying and geodesy, machinery and electro-technology, chemical technology and blowpipe analysis, general principles of mining law, mine-management, political economy and finance, mining statistics, and the translation into German of a French or English paper on mining.

The preparation of the drawings and theses required in the German mining course itself possesses a high educational value, as thereby many minute but essential details are brought under the notice of the student by personal observation, which is not always possible in mere lecture demonstration. Besides, in the preparation of a thesis, a student discovers the limitations of his knowledge—itself no mean advantage—and is thus able to repair his deficiencies before commencing the practice of his profession.

Preparation of Theses for Diplomas of Otago Mining School.

In the regulations relating to the issue of diplomas by the Otago Mining School a certain period of practical work is required in all the divisions; and in the surveying division the requirements of plans, profiles, and geodesy, in conformity with the regulations of 1902, form a thesis perhaps more stringent than the German.

Candidates for diplomas in mining, metallurgy, and geology are not required to produce a thesis, and the experience gained in the prescribed period of practical work is often of doubtful value. On the other hand, the advantages attending the preparation of a thesis on a technical subject are manifestly great, and, in order to keep pace with the progressive policy of the Germans, it will be necessary to require a thesis from candidates for diplomas in mining, metallurgy, and geology.

Conclusion.

I wish, in conclusion, to express my appreciation of the zeal and ability with which Dr. Marshall, Mr. Waters, and Mr. Armstrong (lecturers), and Mr. A. R. Andrew (demonstrator in surveying) carried out their several duties throughout the session of 1903.

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
1900–1901 ...	866 10 11	56 3 4	98	77 7 10	1,098 2 1
1901–1902 ...	1,155 12 3	63 5 1	49	69 16 4	1,337 13 8
1902–1903 ...	1,379 15 6	134 18 8	158	111 0 0	1,783 14 2
1903–1904 ...	1,575 15 3	88 18 8	92	109 15 10	1,866 9 9
Totals ...	10,965 14 4	1,477 8 10	747	14,737 11 10	27,927 15 0

The above statement shows the amount expended on the different schools of mines throughout the colony; but, in addition to this, the sum of £10,553 6s. 2d. has to be added, as that has been paid to the School of Mines attached to the University of Otago, £500 being paid last year towards maintaining the school, which makes the total expenditure up to the 31st March last to be £38,481 1s. 2d. This expenditure has extended over a period of nineteen years.

CRUSHING AND AMALGAMATION IN MODERN STAMP-MILLING.

By R. M. Aitken, Metallurgist, Reefton.

The subject of stamp-milling is one about which much has been written, and as the present methods of working and the machinery in use have been so often and minutely described in all details, it will only be necessary in this paper to touch upon the most important parts of the process.

It does seem strange that notwithstanding all the numerous and ingenious inventions for the rapid pulverisation of the ore, and the easy extraction of the precious metals, the stamp mill still continues to hold its own, and is almost universally employed. This no doubt is partly owing to the simplicity of the machinery, the cheapness of the treatment, and its apparent adaptability to the various classes of ores; but the main reason must be on account of the important changes of development through which it has passed. Take for instance the grading by grizzlies, the use of rock-breakers and automatic feeders, the many mechanical improvements effected in stampers, cams, and mortar-boxes, and the increased attention given to wearing-parts and screening; these have all tended to lessen the wear-and-tear, simplify the working, increase the efficiency of the mill, and thus reduce the working-costs per ton. Yet in spite of all these numerous improvements it needs no hesitation to assert that the milling plants of to day are far from perfect; they are undoubtedly more elaborate, more complex, and more costly than formerly, but the methods of crushing and amalgamation are practically the same.

It is not my intention to find fault, or condemn the present method of working without giving reasons for the same, or suggesting some means of remedying the defects; but it is probably time that the matter received some consideration when we find the main principles of crushing being practically ignored to allow of inside amalgamation being practised, and little or no attempt made to properly amalgamate the free gold on outside plates. Perhaps to some men the treatment appears so simple that it has not been made the subject of such study as it fully deserves, or possibly the successful introduction of leaching and other after-processes has caused many metallurgists to lose sight of the desirability of crushing the ore, sizing the pulp, and arranging their tables to obtain a more perfect amalgamation. The improper crushing of the ore, want of sizing, and injudicious use of mercury may not only cause poor battery amalgamation but must seriously affect the working of the after-processes such as concentration, chlorination, and cyanidation; and it seems highly probable that the low extractions so often obtained from these processes may be traced directly to the initial methods of crushing and amalgamation.

The main objects of crushing are to use rock-breakers, stampers, and screens that will produce the largest possible output—crushed to the requisite fineness—for the best and proper extraction of the contained metals, consistent of course with cost, without rendering the pulp unsuitable for amalgamation, concentration, or any other processes that are to follow. But this is not the case in our modern mills where we find the efficiency of many being seriously interfered with by having mortars made suitable for inside amalgamation, by increasing the depth of discharge, reducing the speed of the mill, and dropping stampers in unsuitable rotation to assist this method of saving. It has been stated that this double use of the crushing-machine is the one distinctive feature which has enabled the stamp mill to hold its own against newer inventions for pulverising ore, and to compete with better, but more complicated, amalgamating-machines. This may be so, but at the same time it has given a general and foolish idea that rapid pulverisation can only be secured by impairing amalgamation. Although the practice is almost universal it must be considered one of the most serious errors in stamp-milling—even with free milling ores—and if the properties of mercury and the use of the battery are understood, very little reasoning will show that crushing and amalgamation in the one machine is detrimental to one or both operations.

The mills of Colorado and California in America afford an excellent illustration of the two extreme methods of gold-milling. In the former, the stamps drop slowly from twenty-five to thirty beats per minute, while in the latter a rapid pace of ninety to over a hundred drops is maintained. The theoretical work done in each is about the same, as the height of drop in the one is 16 in. to 20 in., and in the other 4 in. to 6 in.; but in practical work the latter will crush two and a half times that of the former. The great difference is, that in Colorado the ore contains a large percentage of pyrites, and excessive pulverisation was considered necessary to break the close intimacy between the finely divided gold and its associated pyrites. This was attained by a slow drop and a deep discharge, the cushion of water deadening the blow of the stamp, and the design of the mortar being wide and roomy to cause a weaker splash and allow the heavier particles to resettle. But in California, the idea was to induce rapid pulverisation with heavy fast-dropping stamps, narrow mortars (diminishing opportunities of resetting), and shallow discharge to increase the force of the splash and accelerate the exit of the pulp through the screen.

The modern method of wet crushing has practically resolved itself into a standard one, and, although varying to some extent in different mills, it may briefly be described as follows: The ore from the mine before passing into the ore-bin is separated according to size by grizzlies, and the larger lumps broken down by rock-breakers. From the bins it is automatically fed into the mortars, the centre stamp of each battery being so arranged as to control the working of the self-feeder. In the mortar it is crushed to a suitable degree of fineness, and a portion of the free gold extracted by inside amalgamation before passing through the screens. To enable the use of inside copper plates the mortars are made more roomy, and the depth of discharge, speed of the mill, &c., regulated so as to prevent any unnecessary scour taking place. On leaving the box, the pulp (coarse and fine together) is run slowly over one long amalgamated copper-plate table to save the free gold, at the foot of which is placed an amalgam-trap to arrest any escaping particles. The table is about the same width as the front of the mortar-box, with a grade carefully adjusted to ensure an even flow of the pulp. At this stage amalgamation is considered complete, and sizing of the pulp is sometimes done before concentration and chemical

methods of extraction are employed. But more often we find concentration attempted before sizing, the general result being that poorer work is done, as these machines were never intended to concentrate two different grades of material at the one time. It must surely be evident that classification of the pulp is absolutely necessary before proper concentration can be effected, as this operation is entirely dependent upon the size and specific gravity of the particles treated, and the same argument will undoubtedly apply to plate amalgamation.

At the present time the system of treatment after amalgamation is subject to great variation in different mills; in some the whole of the sands are treated in bulk by cyanide, in others, the concentrates are extracted and treated by chlorination, while the bulk of the tailings is sized into coarse sands and slimes. The coarse sands are cyanided in vats and the slimes treated by filter presses, or further concentrated on canvas-covered slime-tables.

The treatment of the ore should certainly be divided into two separate and distinct operations—*i.e.*, First, the pulverisation of the ore—which is purely mechanical; Second, the extraction of the gold—which is partly chemical and partly a mechanical operation.

The Pulverisation of the Ore.

The first thing the metallurgist has to decide is the fineness of the crushing or the size of particle which gives the most economical results. This depends on the character and composition of the ore and it is necessary to ascertain not only its value and percentage of mineral contained, but the condition and form in which the gold exists; because the crushing need only be to that degree of fineness which will liberate the contained gold, or allow it to be extracted by some chemical methods applied to the after-treatment of the tailings.

Although it is generally admitted that gold exists in pyrites in a metallic state, its excessively fine state of division renders mechanical separation practically impossible without first decomposing its enveloping sulphide, and, even if liberated, water-concentration would not save it. Therefore, where the main richness of the ore lies in its mineral matter, comparatively coarse crushing may be admissible so as to avoid reducing those valuable sulphurets to slime which is both difficult to save and treat. Then probably there are cases where ore is plentiful, and mining costs so low, that it is more profitable to lose the extra gold that would be liberated by fine crushing in order to treat a larger quantity, the object being to secure the maximum of profit rather than produce the cleanest possible tailings.

Grizzlies, Rock-breakers, and Self-feeders.

Without the addition of these, no stamp mill can be considered complete, as the ore from the mine is too large to feed direct into the mortars. Large pieces are apt to break the screens, prevent uniform and steady working, and thus decrease the efficiency of the stamps. The grizzlies on which the ore is dumped consist of iron bars set on an inclined plane to suit the material, and spaced a similar distance apart as the bottom ends of the rock-breaker's jaws; all material small enough passes through and the balance goes to the breaker, both discharging into the same hopper. There are two main types of rock-breakers in general use: in one the stone is crushed between a flat fixed jaw and a reciprocating one, while in the other the fixed jaw is circular the moving one gyrating inside it. As the work upon them is most irregular they must be driven by themselves, and, owing to their vibrations and the dust produced, are best kept in a building apart from the other machinery. As crushing in a breaker is performed at about one-fifth the cost of that in a stamp mill, it is advisable to reduce in this manner as fine as possible; for this purpose two sets of rock-breakers are often used with a grizzly between. They are placed one above the other and set to break to two different grades.

In small mines with easily-broken ore, where motive power is costly and labour cheap, hand breaking and feeding may be admissible, but at its best feeding by hand is most irregular. On the other hand, the automatic feeders increase the capacity of the mill by keeping a steady and uniform supply of ore; and as the die is always kept covered with a thin layer of material, the wear of the shoes and dies is less and much more even. With an even wear the stamper-stems are less liable to break and a greater crushing-surface is maintained: in fact the great advantages due to the use of rock-breakers and self-feeders must be evident to all with any knowledge of the subject, and mills without them cannot possibly do the same amount of work as a modern one on the same class of ore.

The Stamper and Lifting Mechanism.

As the result of long experience five stampers in each mortar-box has been fixed upon as the most convenient number, and each five head is known as a battery. It is usual for each two batteries or ten head to have a separate cam-shaft, independently driven from the main driving shaft, an arrangement which allows of that portion being stopped without in any way interfering with the rest of the mill, and at the same time equalises the strain on the cam-shaft.

The stamper, which gives the total falling weight, consists of four parts—*i.e.*, The stem, head, tappet, and shoe, the two former containing over 70 per cent. of the total weight.

The stem varies in length from 9 ft. to 16 ft., and in diameter from 2¼ in. to 3¾ in., and is only subject to wear near the guides.

The head or boss is of almost universal pattern from 16 in. to 20 in. long and of the same diameter as the shoe; it is cast with two sockets, the upper portion being bored to receive the tapered end of the stem, and the lower portion recessed to receive the shank of the shoe. Key-ways through the head admit of the insertion of a tapered steel drift, by means of which the shank of the shoes or end of the stamp-stem can be driven out. The shank of the shoe enters the head and holds it in its place, and the butt forms the wearing-face of the entire stamp. Its diameter varies with the weight of the stamp and the drop given, usually in such proportion as to give from 11 lb. to 14 lb. per square inch of crushing-surface.

The tappet forms the projection under which the cam catches and lifts the stamp, and is fitted to the upper portion of the stem, being accurately bored so as to give a good sliding fit. This is necessary owing to the tappet requiring to be constantly adjusted according to the wear of the shoe so as to maintain a proper drop and prevent the striking of the cams. The old style of securing the tappet to the stem was with two vertical keys; in modern practice a gib fitting the curvature of the stem is placed within a recess in the tappet, and tightened by means of two or three side keys. To enable the tappets to be reversed when worn, both ends are faced and counterbored. The lifting mechanism is performed by cams with two arms fitted to the cam-shaft and curved in such a manner as to convert the uniform rotary motion of the cam-shaft into an upward motion of the stamp-stem, so that the rate of lifting shall be uniform, and by the intermittent action time is given so that the stamper may fall freely under the action of gravity.

The cam-action on the tappet tends to revolve the entire stamp on its own axis by friction, the extent of which depends on the velocity of the cam, weight of the stamp, and lubrication of the two surfaces. The speed of rotation should not be fast—about one complete revolution in twelve to twenty drops—it contributes greatly to the regular working of the whole machine, and causes the wearing-surfaces of the shoe and die to be more uniformly affected.

The old method of attaching the cams to the shaft with keys is now rapidly being superseded by the self-fastening cams of the Blanton type which grip the shaft by friction and are clamped more firmly with the lifting of the stamper. In this type the cam is bored to fit the shaft for about half its circumference the other side being fitted to receive a curved wedge, turned on the inside to the radius of the cam-shaft and of such a length as to allow the cam being moved about $\frac{3}{4}$ in. on the outside face. The wedges are suitably distributed along the shaft and held in position by two small dowels, the cams being simply slipped over and drawn smartly back on the wedges to fix them. A light blow on the under-side will release the cam and thus a whole set can be removed and replaced in a very short time.

A more recent modification of the Blanton grip is to machine the cam-shaft so as to have ten taper-faces running along its full length. This allows any cam to be placed in any required position on the shaft without the least fitting, and the order of drop can be easily altered if found necessary.

Height and Speed of Drop.—The height of drop must be in proportion to its rapidity. Sufficient time must be given for the stamper to fall by gravitation to a state of rest before being again lifted, otherwise the tappet will strike the cam. With a low drop a shorter-armed cam is used which lessens the leverage, decreases the strain, and allows of greater speed. With those who use the stamp mill for the purpose of crushing the high drop is a thing of the past. A 6 in. blow should be the maximum of drop with an increase in the weight of the stamper according to the hardness of the rock under treatment. Heavy fast-dropping stampers with the necessory low drop are undoubtedly the fastest crushers and will produce the most uniform tailings when worked under proper conditions.

The Order or Rotation of Drop requires careful attention before uniform working can be obtained, for it is absolutely necessary that an even layer of material should be kept over the dies, and an accumulation of crushed quartz at either end prevented. With inside amalgamation it is necessary to obtain a steady uniform wash backwards and forwards of the pulp in the mortar-box with as little splashing as possible; but there appears to be a great diversity of opinion as to which is the correct order of drop. It is probably affected to a certain extent by the height of the drop, shape of the mortar-box, position and area of screens, &c., but in most cases it is necessary to increase the drop of the stampers at either end of the box to ensure regularity. To vary the drop of individual stampers in a battery does not appear the correct way to overcome the difficulty, and should any difference be necessary it should be done by increase or decrease of weight. The common practice of dropping individually may possibly not be the best method, for there are cases where the stampers are dropped in pairs (*i.e.*, 1 and 5, 3, 2 and 4; or 2 and 4, 3, 1 and 5) in order that an even layer of material may be maintained without any difference in the drop, or weight of the stampers. Whatever the order of drop may be the weight should be evenly distributed over the cam-shaft to insure an even speed, and this is just as easily done by dropping in pairs as individually.

Mortar-boxes.

The capacity and efficiency of a mill must depend largely on the design and construction of the mortar, which varies considerably in weight, dimensions and shapes, according to the use for which it is intended. If required solely for crushing the design should be narrow, and of such a shape that the material cannot escape the crushing effect of the stamper, and must fall under the shoe thus increasing the force of the splash, diminishing the chances of pulverised ore resettling, and accelerating the exit of the pulp through the screen. But if, on the other hand, its crushing-capacity is to be reduced by attempting to make it an amalgamator, then let the mortar be more roomy so that inside plates may be used, give a weaker splash (increasing the chances of resettling) and thus allow portion of the ore to be unnecessarily slimed.

Mortars are generally cast in one piece and open the full width in the front to receive the screens through which the crushed ore is discharged. At the back, a feed-shoot is provided (sufficiently high to prevent splashing) with an opening extending from centre to centre of the two end stamps.

To get the best effect of the blow of a stamper the weight of the box must bear a certain definite proportion to it, no matter how good the foundations may be, or how firmly the mortar-blocks may be set. Although no doubt the proportion of weight has been well thought out, it still appears that a 4-ton box for 1,250 lb. stamps is on the light side, and from my own experience it seems highly probable that by increasing the weight of the mortar to 5 tons for 1000 lb. stamps, the crushing-capacity of the battery would be greatly increased. The heavier the stamper the faster it will crush, but the weight of the mortar or anvil on which the ore is crushed must increase proportionately before receiving the true effect of the blow. Although many assert that the mortars in use are quite heavy enough I feel sure that extra weight would prove to the contrary.

The wearing-parts of the mortar-boxes are protected by liners of cast-iron or wrought-steel plates (the latter being preferable) which can easily be renewed when necessary.

In the bottom of the mortar-box are placed the dies which form the working-face upon which the ore is crushed. There is one die to each stamper, the upper portion being cylindrical to correspond in diameter with the stamp-shoe, and the lower portion a square footplate with bevelled angles to facilitate the lifting from the box. The wear-and-tear of the shoes and dies not only depends on the ore and the degree of fineness to which it is crushed, but varies with the regularity of the feed, the rotation and drop of the stamper, and the varying depth of discharge. The material in use depends largely on local conditions; steel has the longest life but cast-iron gives a more even wear. The general opinion is that a steel-shoe with a cast-iron die renders the wear of each more uniform.

Screens.—We now come to what must be considered one of the most important questions in connection with the successful working of any mill—*viz.*, the proper size of the orifice of the screens. This can only be determined by a systematic sampling, grading, and assaying of the tailings, together with a careful study of the ore. The requisite degree of fineness to which the ore has to be crushed being partly decided upon, the question is—"What size of orifice in the screen will produce the maximum number of particles of the required size?" To arrive at this many things have to be considered, for only a small portion of the pulp (say about 10 per cent.) is actually crushed to the maximum size of the orifice, the rest being much finer, and a large proportion (in most cases about 40 per cent.) is reduced to slime. It is therefore evident that the size of the orifice does not determine the degree of fineness to which the ore is crushed and much depends on the width and shape of the box, the distance of the screen from the centre of the box, the rotation of the stampers, the height and speed of drop, and the depth of discharge. Suggestions have been made to use coarser screens than those required and thus crush 40 to 50 per cent. to its proper fineness, returning the 10 per cent. that is too coarse to the mortar; but surely when the causes of such irregular crushing are so self-evident the difficulty may be overcome to a large extent by using the stamp mill intelligently as a crusher, and giving every facility for the pulp to be discharged through the screens as soon as possible after it is crushed to the required size.

The screens in general use are of various kinds, some being plates suitably perforated (either plain or burred) and others are made of woven wire. Although the sheet-screens are more durable than those of woven wire, the latter present a far greater discharge-area giving sufficiently crushed particles an equal chance of being discharged or retained. The woven wire gives the necessary conditions for uniformity of pulverisation and a high crushing-power, their liability to choke being easily overcome by proper attention.

The screens are fastened to wooden frames and held in the frame-seat in front of the mortar-box by two long steel keys; they are usually set widening outwards at an angle of about 10° which renders them less liable to break without detracting from their efficiency.

The screen-area required would no doubt vary somewhat according to the material being crushed, but should only be increased when it cannot discharge as fast as the ore is crushed. Although it is quite possible that screening may be used to better advantage on a mortar-box, it does appear that in the modern mill with ordinary clean quartz the screen-area is quite large enough for the quantity crushed.

The Depth of Discharge is the distance from the level of the issue to the top of the die and varies in different mills from nothing to 12 in. or 15 in., according to the method of working. A deep discharge compels a slow crushing but a far more minute pulverisation of the ore than the screens indicate, as the material, instead of being forced up against the screen, has to rise up through the water before reaching it. The shallow discharge induces a more rapid but coarser crushing, as there is only a thin cushion of water between the ore on the die and the descending stamp which causes a more violent splash and forcible issue. The main use of a deep discharge in a modern mill is not for the purpose of fine crushing, but to permit of inside amalgamation being practised without the scour being too noticeable. It is, however, the varying depth of discharge (the great importance of which in many mills is underestimated; for, as the die wears, the depth increases) which creates such changing conditions and consequently renders it more difficult to regulate the thickness of the ore upon the die or crush to the requisite degree of fineness. This variation amounts to about 5 in., and in order to keep the discharge regular chock-blocks are inserted at decreasing depths according as the wear takes place; these when used in addition to false bottoms for insertion below the dies place the depth of discharge under complete and accurate control.

The Extraction of the Gold: Uses of Mercury.

Almost every system of gold-milling depends partly on the employment of mercury which has apparently been used from very early times. Being in a liquid state, at ordinary temperatures it differs from all other common metals, and has the property of uniting with gold, silver, copper, and other metals to form alloys or amalgams. On exposure to the air surface-oxidation takes place and it emits vapour to slight extent although its boiling-point is about 360° C. If mercury is agitated with pure water a certain amount is taken up mechanically in a state of minute subdivision, therefore, when subjected to the violent agitation and scouring action of sand and water in a stamp-battery, the extent to which flouring will take place is easily understood, apart from the injurious effects of deleterious matter contained in the ore.

By "flouring" is meant subdivision from mechanical causes, and once this occurs the action of foreign bodies (always present to a certain extent in stamp-milling) produces what is known as "sickening," where the particles so formed become coated with a film preventing a reunion. Grease, oils, and fatty substances readily cause sickening, and the base minerals always associated to a certain extent with gold and silver ores—*e.g.*, sulphur, arsenic, antimony, zinc, &c.—produce the same effect though probably to a lesser degree. This sickening produces a permanent flouring, and once the mercury is in

this condition its property as a gold-saver is gone, and its liability to be carried away by the muddy waters increased, as it will not then save on amalgamated copper-plates or in mercury-traps. Yet some millmen says that flouring is not always injurious but rather favourable to amalgamation, as it allows the globules to alloy themselves with the gold before being coated. Such an assertion is probably on a par with a statement made by a person grinding tailings in berdans who said, " Berdans save gold best when they are losing mercury and the more that is floured and lost the more gold is saved."

Inside Amalgamation is practised in almost every modern stamp mill, but there appear to be few arguments in its favour and many against it. My own opinion is that the above statement regarding berdans can be correctly applied to its use although it is carried out on a more scientific basis. In its simplest form no plates are used, the mercury being fed in at regular intervals and the quantity arrived at by guesswork. The churning of the stampers intimately mixes the mercury with the pulp, and the mercury coming in contact with the particles of gold, the two metals amalgamate more or less thoroughly. Part of the amalgam produced gradually coheres in small lumps and settles down in between the dies, while some is projected towards the screens, and passing through them is caught on the outside plates, or where inside plates are used a portion may adhere to these. The process is exactly the same with inside copper plates except that they facilitate the collection of the amalgam and help to retain it in the mortar. The condition of the escaping amalgam indicates the process of amalgamation, if hard, brittle, granular, or inclined to crumble, there is not enough mercury ; if thin, soft, and pasty, there is too much and the supply is regulated accordingly.

When inside amalgamation was first practised both front and back plates were used, but as the weight of the stampers increased the plate on the feed side was discarded, and the one below the screens curved away so that it cannot be struck directly by the splash of the stamp. This was necessary on account of the scouring action of the pulp which undoubtedly still takes place, but only to such an extent that it is not now noticed, because these plates are being constantly supplied with amalgam as it is formed. But let us ask the question " Do these plates even now, after becoming well coated with amalgam, ever lose almost the lot by scouring action ? " and the answer must be that such things happen too often. The running of the mill too fast, the varying depth of discharge, and improper or irregular feed all tend to produce severe scour, even allowing that the amalgam formed is kept in a proper condition, which at its best is highly improbable. Now supposing we allow that none of these variations occur, and the whole stamp mill is regulated to a nicety and worked in a perfect manner, then any observant person who understands amalgamation must admit that scouring still takes place, but with the amalgam constantly accumulating the extent of the evil is not noticed. Should any millman doubt the effects of this scouring action let him get his inside plates in good order and start crushing barren ore ; it will probably not take long to bring the plates into the same condition as the ore.

But so far, we have allowed that the ore contains no foreign matter to interfere with the action of the mercury—a condition almost impossible to obtain—for even those known as oxidized ores, must be only partially so, and acid sulphates must result. Where base metals exist in the ore sickening must take place, and more especially if the mercury is agitated with it in the mortar-box and brought into a floured state. It is probably one of the best methods of producing sickened mercury which cannot be saved by ordinary plate amalgamation or mercury-traps, and thus escapes to the concentrators if in use. On the concentrators with a plentiful supply of clean water a portion is saved, but the greater part is probably lost or some may enrich the concentrates saved on slime-tables. The mercury lost is simply amalgam containing varying percentages of gold, so it is evident that by attempting to force amalgamation both gold and mercury are lost.

The arguments used in favour of inside amalgamation are : First, save the gold as soon as possible after liberation as overstamping will probably make it non-amalgamable. Second, amalgam is less apt to be floured than gold and is three times as heavy as the gold it carries, and so only one-third the loss is entailed.

To save the gold as quickly as possible is a good idea, *providing it is likely to remain in the place it is saved*, but to amalgamate, and then subject the amalgam to scour, is simply ridiculous. Experience will prove to any man that mercury or amalgam in any condition is far easier broken up into small particles and floured by the action of a stamper than gold is. Gold, when once amalgamated, is reduced in specific gravity, and by continous pounding and amalgamation coarse pieces of gold that could not possibly escape are brought into such a condition that they may be lost. That overstamping prevents gold from amalgamating has never been proved in practice, but in any case overstamping is not necessary in a properly worked stamp mill where the ore is discharged almost as soon as it is crushed to the required size.

The arguments against the use and the ill effects of inside amalgamation have already been shown, but may be summarised as follows : First, it prevents the full efficiency of the stamp mill as a crusher being obtained, and causes the pulp to be either crushed much finer than is required or delivered in a very uneven grade. Second, it flours mercury by agitation and grinding, which, though sickening, is afterwards lost. Third, it amalgamates, and then granulates the amalgam formed by its scouring action, thus losing coarse gold which could not possibly be lost in ordinary crushing. Fourth, as the percentage of base metals in the ore increases, so it becomes less effective in saving, and more injurious to the mercury, until in some ores its use is impossible because no amalgam will remain in the box or on the plates and, lastly, the bulk of the gold saved by its use at any time is only that which would readily save itself.

Now surely when all the arguments for and against are carefully considered the verdict must be against attempting to crush and amalgamate in the one machine, and I am certain the time will come when the injurious practice, although now almost universal, will be abolished. In mills where inside amalgamation is practised the mercury-loss is highest, and floured mercury and amalgam may be found, not only in the concentrates, but in the tailings and slimy water which flows away.

Outside Plate Amalgamation.—The amalgamated copper plates are usually laid down immediately under the lip of the mortar-box, and, being of the same width as the front of the box, the pulp requires very little distribution on to the plate. There is no reason why the plates should be placed in this position or be confined to that width, as they are certainly in the way and liable to injury while shoes, bottoms, and screens are being changed. They would be subject to less vibration if placed some distance from the crushing-machine.

The crushed pulp is run in so thin a stream over the plates that the friction causes it to travel in little wavelets which are supposed to bring every part of the pulp in contact with the amalgamated surface; but still the practice of running coarse and fine material together over plates set on the same grade and with the same flow of water must certainly be wrong, because if the conditions are suitable for fine, they cannot properly treat the coarse material. To obtain the thin stream the water is reduced, thereby thickening the pulp, and as the speed of flow must be sufficient to keep the heavier and larger particles moving it cannot possibly be expected that the finer particles of gold, travelling in this stream of muddy and slimy water, ever get a chance of coming in proper contact with the amalgamated surface. A small water-supply and a high inclination of table will probably give better results than the opposite conditions, always allowing that there is ample water to make a thinly fluid pulp. A finely crushed or clayey ore requires more water and less grade than coarsely crushed ore, while one rich in sulphurets requires more water and a steeper grade than clean quartz.

The mechanical effects of sand and water passing over the amalgamated surface often cause scouring—*i.e.*, the granulation of mercury and amalgam from the plates—and this is all the more noticeable where the quantity of water or grade of the plate is unsuitable for the unevenly crushed material, and when heavy substances such as heavy spar, scheelite, or base minerals are present. The theory of plate amalgamation demands a clean amalgamated surface carrying a small excess of mercury, with the grade of the tables and quantity of water so adjusted that every particle of escaping pulp shall be brought in contact with that surface. The quantity of water must be sufficient to make a thinly fluid pulp, and the speed of flow should only be fast enough to keep the particles on the move. Scour will take place to a small extent with the finest of sands, but the object is to reduce it to a minimum. It is therefore evident that the present system of plate amalgamation is totally unsuitable for treating the uneven pulp issuing from the stamper-boxes, and that classification according to size is absolutely necessary before the extraction of the gold is commenced. Amalgamation does not require force, but only proper contact. It is certainly better to allow that portion which will not amalgamate to pass on and be extracted by other methods in its natural state than to attempt to save it by violent agitation. By forcing amalgamation, mercury and amalgam are lost in such a condition as to render the saving and after-extraction a difficult process; for that portion saved in concentrates would be partially brought together by the action of the concentrator, and the larger pieces, after roasting, would be more difficult to dissolve by chlorination. Then the action of the cyanide would be too slow to dissolve that portion in the tailings unless it happened to be in an oxidized condition; but the principal loss would be in the finest slimes which often constitute the richest part of the tailings and certainly the most difficult to treat. The evil effects of improper amalgamation have apparently never been taken into serious consideration, and I feel certain it would repay every millman to give more attention to this part of the process and find out the condition in which the gold leaves the plates.

Having pointed out many defects and irregularities in our modern system of crushing and amalgamation, let me in conclusion suggest some improvements in the method of working:—

First, dispense with inside amalgamation. Let the ore be reduced by rock-breakers to even a half-inch mesh and be pulverised in the stamp-battery to the requisite degree of fineness as quickly as possible, and give every facility for its discharge through the screens when so crushed. *In short, use the stamp-battery solely as a crusher.*

To do this, maintain a high speed with a low drop in such order as to keep an even layer of material on the dies and at the same time facilitate the discharge. Design the mortars narrow, give sufficient screen-area, and keep regular—with the aid of chock-blocks, without plates—as shallow a discharge as possible. The weight of the stamper may probably stand increasing, but it is first necessary to bring the weight of the mortar-boxes up to their proper proportion, those at present being too light to give the true effect of the blow.

As already stated, the mechanical portion of a stamp mill has been greatly improved upon, but it is the method of working that requires altering. Our engineers can show us returns of the increased tonnage crushed per stamp, but we must also remember that the weight of that ton (2,000 lb.) is considerably less than that crushed some years ago. No doubt the present mill crushes more per stamp than those without the aid of rock-breakers, self-feeders, &c., but still we find that increased quantity passed over the same width of copper plate with less water to save the free gold.

Secondly, do not amalgamate by force, but by contact.

The coarse pulp on leaving the mortar-boxes should be classified by hydraulic sizers, and thus separated into two or three different grades the latter number for preference. Three products would result—First, coarse sands; second, fine sands; and, third, slimes; each of which should be passed over separate sets of amalgamated copper plates with a spread, quantity of water and grade to suit each product. In the present mills we find the grade of tables and quantity of water being constantly altered. It is seldom that two millmen can agree which is best, because the plates in both cases are expected to do an impossibility. The correct method of treating each product from the separators should be arrived at in a systematic manner—by first ascertaining the quantity of water required to bring each into a thinly fluid pulp, then a suitable spread of amalgamated plate surface for each quantity is arranged, and finally, the fall on each set of tables is so adjusted that the particles are just kept continuously on the move and nothing more. For the coarse sands containing the bulk of the heavy gold and sulphurets the spread would be small, but the water would flow over the plates practically

clear; the fine sands would require more water, less grade, and a large spread, while the slimes with a fluid pulp would be passed in a very thin stream over plates with a low grade. The condition of the amalgam on the different plates could then be kept suitable for each class of gold, being hardest for the coarse material and softer for the slimes; a feature which would be impossible on the ordinary plate. By this method of working, plate amalgamation is carried out in a scientific manner, giving every particle that will amalgamate a chance to do so by proper contact, and at the same time reducing scour to a minimum.

The amalgamating-tables should be placed some distance from the crushing-machines so as to be free from vibration, and properly attended to without fear of injury from the rough usage they are likely to receive in the present mill.

After amalgamation, each product may be concentrated separately on suitably adjusted machines, and the tailings treated by cyanide; the coarse and fine sands would be leached by natural percolation, and the finer slimes worked by the efficient but more complex filter-press process. After each treatment samples may be systematically taken, and assays would show the extractions being obtained and whether coarser or finer crushing is advisable.

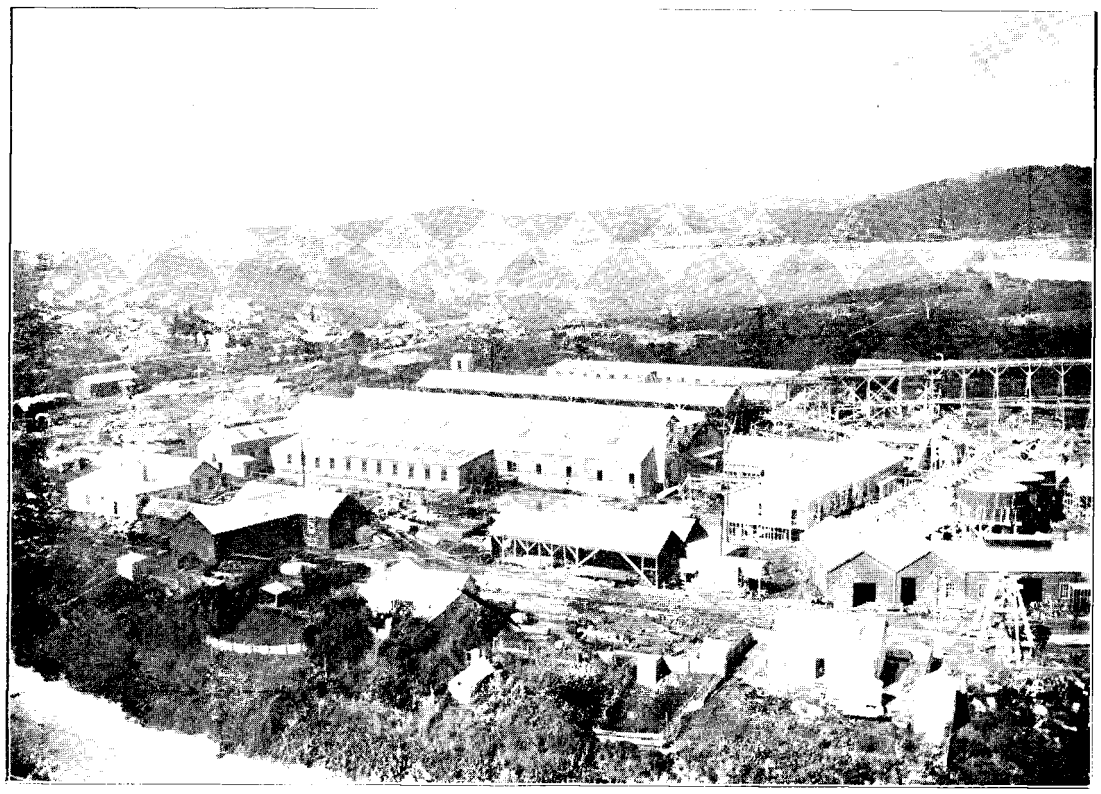
The opinions expressed in this paper I have advocated for many years past, and feel certain that our present stamp-milling methods require improving in the direction stated. At the present time I am unable to enter more fully on this important subject, but hope this paper may induce others, who have probably better opportunities of doing so than myself, to experiment.

Conclusion.

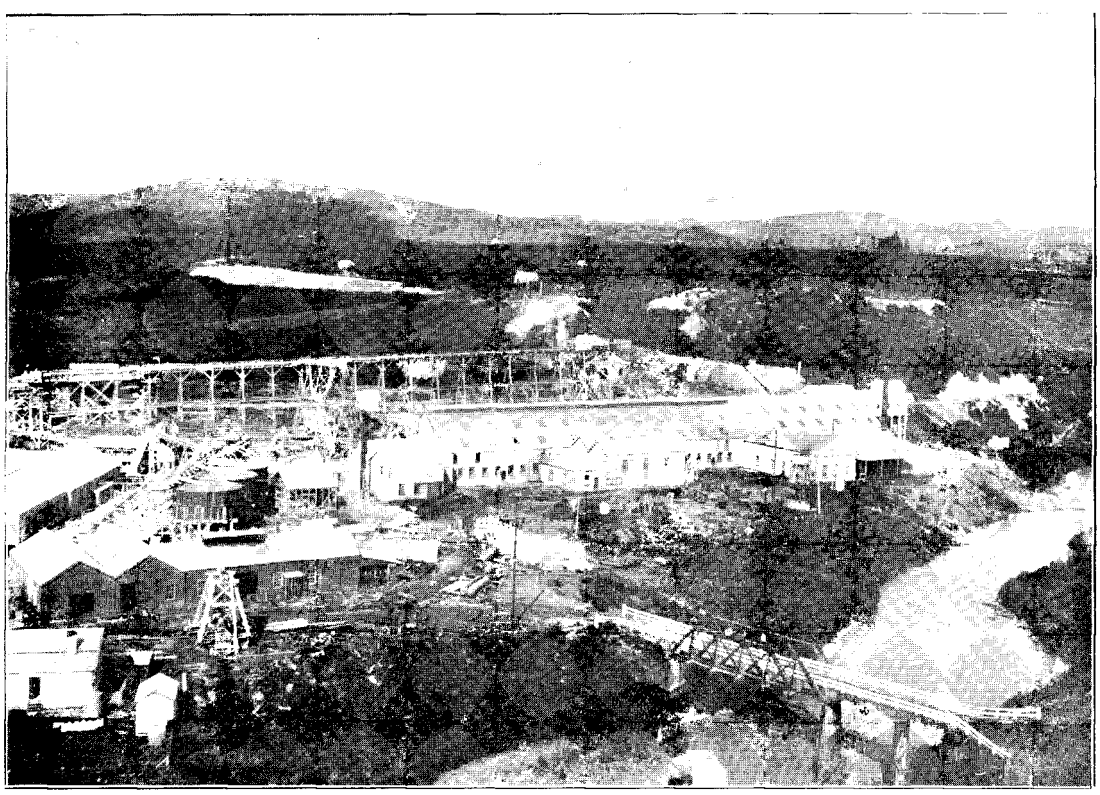
In the following Appendix will be found—(*a*) the annual reports of the Inspectors of Mines, Wardens, Managers of Government Water-races, Government Geologist, and that of the Engineer for Water-conservation; (*b*) the questions used at the last examinations of candidates for certificates of competency as mine-managers and battery-superintendents; (*c*) a list of persons to whom certificates as mine-managers, battery-superintendents, and dredgemasters, have been issued; and (*d*) the usual statistical returns.

I have, &c.,
John Hayes,
Inspecting Engineer.

The Hon. the Minister of Mines, Wellington.



WAIKINO BATTERY, WAIHI GOLD-MINING COMPANY.



WAIKINO BATTERY, WAIHI GOLD-MINING COMPANY.

APPENDIX.

REPORTS OF INSPECTORS OF MINES.

Mr. JAMES COUTTS, Inspector of Mines, Thames, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,— Inspector of Mines Office, Thames, 14th March, 1904.

I have the honour to furnish herewith the following report on the gold-mining industry in the Hauraki district for the year ended the 31st December, 1903.

Mining on the Thames and Coromandel has not improved much since my last report. The people at the Thames subscribed liberally to a fund to be used for carrying on boring operations to test the country at depth in the vicinity of some of the mines where rich gold was obtained in the early days of the goldfield, and were in good hopes that either gold-bearing lodes or country of a favourable description would be met with. An arrangement was entered into with the Goldfields Diamond Drilling Company (Limited) to put down a series of holes. In the month of August two sites for boreholes were selected, and in the early part of September, boring operations were commenced on the Kuranui Caledonian Company's ground, where a borehole was put down to a depth of 1,041 ft., and the Caledonian No. 1 Reef penetrated into for a few feet, when by some means the crown-head and diamonds with a portion of the rods got squeezed tight in the bottom of the hole. Up to the present time these have not been extricated, and instead of several holes having been put down by this time, it may be said the work has not been fairly commenced, a condition which has proved most disappointing to all concerned. Boring has also been carried out on the Thames foreshore, and also in the Ohinemuri District, at the Woodstock, Waitekauri, Grand Junction, Consols, and Consolidated Mines, but in nearly every case the results have not been so satisfactory as could be desired. The mines in the Ohinemuri district (as will be seen by the returns) have contributed a large share of the total bullion during the year.

WAIHI DISTRICT.

Waihi Gold-mining Company.—This company's works are increasing to considerable dimensions, and the most up-to-date machinery is being obtained to replace that which formerly was sufficient for the requirements. A large winding plant is in the course of erection at No. 1 shaft, which will be capable of hauling up two trucks at a time instead of one, thus enabling the company to increase the output from the mine should it be required, or in the event of any stoppage in the other winding-shafts through accidents or otherwise, a sufficient supply of quartz could be hauled up this shaft to keep the batteries running. A powerful pumping plant is in the course of erection at No. 5 shaft; this, together with the present engine now doing most of the pumping on the same shaft will, it is supposed, be capable of unwatering the mine to a depth of 3,000 ft.

The work of development in the mine is being vigorously proceeded with, and as the lode-system is opened up from day to day, new discoveries are being made and the value of the mine becomes more apparent, proof of which is shown by the handsome returns obtained from the ore as it is broken out.

At Waikino Mill great improvements and additions are being made. The most important in hand is the erection of a plant to treat the concentrates, which have for some time past been transmitted to New South Wales for treatment. From tests already made, this new plant will put through a large tonnage, and the extraction will be quite as good as that at the works in New South Wales.

No. 6 level.—No. 6 shaft north-west crosscut was commenced at a point 665 ft. east of No. 1 shaft crosscut, and driven a total of 96 ft. Harris's north-west crosscut was started at Harris's pass on Empire lode, and run north-west for 550 ft. The following reefs were passed through: At 195 ft., quartz 2 ft. wide; at 200 ft., quartz 3 ft. wide; at 208 ft., quartz 1 ft. 9 in. wide; at 492 ft., Albert lode, 4 ft. wide. No. 4 shaft south-east crosscut was advanced from 71 ft. to 158 ft. from No. 4 shaft when north section of Royal lode was met with. No. 5 shaft north-east crosscut was driven from No. 5 shaft to north section of Royal lode, a distance of 119 ft. South-east crosscut from Empire lode near Rose Pass was driven a total of 59 ft.; at 37 ft. in, a part of L lode 3½ ft. wide was passed through; at 55 ft. in, another section of L lode is seen—it is 2 ft. wide. Martha lode: North section east of No. 1 shaft has been driven on from 515 ft. to 944 ft., and also west of No. 2 shaft north-west crosscut from 138 ft. to 254 ft. The total length opened up on the north section of lode is 1,700 ft., crosscut at 516 ft. east, lode 48 ft. wide; crosscut at 571 ft., lode 23 ft. wide; crosscut at 705 ft., lode 32 ft. wide; crosscut at 753 ft., lode 28 ft. wide. No. 2 reef west of No. 6 shaft crosscut has been driven on a total of 340 ft.: lode varies between 2 ft. and 6 ft. in width. Regina lode west of No. 1 shaft: North-west crosscut has been driven on from 204 ft. to 398 ft.: lode varies between 2 ft. and 20 ft. wide. Albert lode north of Empire lode junction: A total of 606 ft. has been opened up on its course.

No. 5 level.—Martha lode: North section east of No. 1 shaft has been driven on from 743 ft. to 793 ft.: the total length of level on north section of Martha lode is 1,426 ft. Regina lode west of No. 1 shaft has been driven on from 199 ft. to 366 ft.: lode varies between 1 ft. and 8 ft. wide. No. 2 reef west of No. 6 shaft has been driven on from 52 ft. to 265 ft. west. Empire lode west of No. 2 shaft south-east crosscut has been driven on from 87 ft. to 243 ft., when a connection was made to Welcome lode: the lode varies between 1 ft. and 4 ft. wide. Albert lode north of Empire lode junction has been driven on from 48 ft. to 447 ft. north. Royal lode: Westward, the main section of lode was followed from 250 ft.

to 441 ft. from No. 5 shaft south-east crosscut; eastward 129 ft. was driven, making a total of 320 ft.: the average width of the lode is 9 ft.

Shafts.—No. 1 shaft: No sinking has been done. The bottom of the shaft is 572½ ft. from surface. New guides—5½ in. by 4 in. have been placed in the winding-compartments. A new set of poppet-legs have been placed over the shaft. A Babcock and Wilcox boiler has been built in. A new winding-engine is about to be erected. No. 5 shaft: No sinking has been done. The second plunger of B pump has been placed in position at the 704 ft. level, also an auxiliary 14 in. diameter drawlift. A balance-bob was put in at No. 4 level. The shaft was divided into three separate compartments, and new dividing-pieces had to be put in from top to bottom. This was done to introduce a larger pump on the east end of shaft called C pump. At the 704 ft. level, the cistern chamber has been excavated for the first plunger gear. The bottom part of the plunger-lift has been placed in position, also 90 ft. of the rising main. A 20-ton capstan has been erected, also 4 Babcock boilers. The winding-engine has been altered to suit the requirements of the single winding-compartment. No. 6 shaft has been sunk from 166½ ft. to 443 ft., making the distance sunk during the period 277 ft. An 18 in. filling-pipe has been placed in the ladder-compartment which delivers the filling at No. 4 level for the Martha east-end stopes.

Mine-development and deadwork.—Crosscuts through country, 3,733½ ft.; on course of lode, 8,563½ ft.; crosscuts in lode, 530 ft.; winzes sunk, 5,921 ft.; shafts sunk, 289 ft.: total, 19,039 ft., or 3·6 miles. At No. 5 shaft the erection of the new pumping-engine known as C pump has been proceeding for some months. The capacity of this pump is 1,500 gallons per minute from a depth of 1,500 ft. Very massive concrete foundations were necessary owing to the nature of the ground. The high-pressure cylinder, bed, guides, and cross-head are erected in position: the large plummer-blocks for trunnion of beam fixed in position, and the beam (which was delivered in three lengths) is now being riveted together. The low-pressure cylinder, weighing with its wooden lagging some 23 tons, was delivered at the shaft in December. The concrete walls of the pump-buildings are approaching completion.

Product.—A total of 214,508 tons was treated during the year, which was obtained in the following proportions from the various reefs worked: Martha reef, 94,296 tons; Empire reef, 46,216 tons; Welcome reef, 29,499 tons; Regina reef, 7,895 tons; Magazine reef, 5,763 tons; Princess reef, 5,531 tons; Albert reef, 5,210 tons; Victoria reef, 5,109 tons; reef J, 4,750 tons; reef I, 4,173 tons; reef L, 2,014 tons; Surprise reef, 1,637 tons; Royal reef, 1,346 tons; No. 2 reef, 1,089 tons; reef H, 53 tons; reef C, 37 tons; total, 214,508 tons. The whole of this has been wet-crushed. The product was 677,873 oz. of bullion exclusive of concentrates and slag-tailings which were shipped. A total of 1,784·73 tons was shipped, the total value of which, according to assay, was £82,402 6s. 4d. The value of the total product was as follows: 677,873·1 oz. of bullion, excluding concentrates and slag-tailings, £519,445 10s. 1d.; assay value of concentrates shipped, £82,402 6s. 4d.; assay value of slag-tailings, £1,319 12s. 4d.; total, £603,167 8s. 9d. A total of 78,881 tons was passed over amalgamated copper plates; the average value of the bullion per ounce was 15s. 4d. or 1s. 9d. lower than the preceding year, a better extraction of the silver-contents having been obtained.

Reduction-works.—The respective tonnage crushed at the mills amounted to 214,508 tons. The total average number of stamps running during the year, exclusive of Sundays and the period at Christmas, during which the mills were stopped, was 317,470 out of a total of 330 stamps. The total average duty per stamp per diem was 2·406, an increase of 0·288 over the preceding year.

Waihi Mill (90 stamps).—Twenty-eight Union vanners have been erected, and are in use. Towards the end of the year another press was obtained from Martin and Co., making five of this make of press now in use. A new dynamo was erected, and electric light cables have been run throughout the plant wherever extensions or alterations were necessary.

Victoria Mill (200 stamps).—A third turbine of 100-horse power which was in stock, has been erected, and was brought into use during the month of August. Since then very little steam-power has been required. A mechanical chain-grate stoker was obtained from England, and has now arrived at the Victoria Mill. Several machine tools have been added to the machine-shop. A series of trials for the treatment of concentrates at the Victoria Mill, instead of shipping them, have been carried out for some months. Tenders were called for ten steel agitating-vats 6 ft. in diameter and 15 ft. 9 in. in depth. The vats have since been received, and erected upon timber trestling and the necessary V boxes were constructed. The tube-mill came to hand in October, and was erected. The shafting for driving it, and an air-compressor and pumps, together with a pressure-tank were also installed. Work in connection with the whole plant has just been completed.

Union Mill (40 stamps).—The Babcock and Wilcox boiler formerly used at the No. 1 shaft of the Union Mine was removed to this mill, and re-erected as the single Babcock and Wilcox boiler in use was overtaxed. A settling-tank and filter was made to improve the quality of the boiler-feed water. A new turbine was procured, and brought into use for driving the agitators.

An average of 1,120 men were employed by the company. The large sum of £250,000 was paid in dividends during the year, totalling £1,257,189 17s. 6d. since commencing work.

Waihi Grand Junction Gold-mining Company (Limited).—This company have two claims. One is situated on the western side of the Waihi Company's mine, and the other on the eastern side, and they comprise 90 acres and 190 acres respectively. As the claims do not adjoin each other, they have to be worked as two separate mines. At the beginning of the year, the company were carrying on prospecting-work in both mines, but after a few months' work, not meeting with the success anticipated, it was decided to apply for protection for the western claim, and direct the whole of their attention to the mine on the eastern section, where most encouraging prospects were being obtained. While working on the western mine, a large amount of sinking, driving, and rising was done to effect communication between the B and C shafts for ventilation, and when this was accomplished, a crosscut drive was put in a distance of 56 ft., where the reef was intersected, and driven through and found to be 14 ft. wide.

The quartz consisted chiefly of large blocks of oxidized ore, and on tests being made, it was found to be very low grade. In the eastern section communication has been effected between Nos. 1 and 2 shafts, which has given excellent ventilation to this portion of the mine, but to complete this work, 243 ft. of rising and driving had to be done at a considerable cost. At No. 2 level, the drive on the lode was extended for a distance of 36 ft. for the purpose of reaching the Waihi Company's boundary. In the north-eastern drive on the lode at the same level the drive has been extended a distance of 304 ft., and four winzes opened out and sunk for a short distance below the level. The lode here (I am informed) at each place gave satisfactory results, and the company have every confidence this portion of their mine will prove to be highly payable at greater depth. At the bottom of No. 1 shaft the No. 3 level crosscut has been driven a distance of 167 ft., In the month of May the directors decided to test the lode at a depth of 1,000 ft. by means of boring, and let a contract to the Goldfields Diamond Drilling Company (Limited) to put down a bore from the 500 ft. level at an angle of 68½°. At a depth of 458 ft. the first quartz was met with, and the bore was to all appearance in lode-formation, until the supposed footwall of the lode was reached at a depth of 784 ft. The company intends shortly to commence sinking the No. 1 (main) shaft to a distance of 750 ft., where a crosscut drive will be put in to intersect the lode. An average of twenty-nine men have been employed.

Waihi Extended Mine.—This company's operations have been directed to crosscutting north, south, and westward, at the 500 ft. level, with the object of discovering the Waihi Company's lodes. In several places quartz and silica veins running through the country were met with, and what appeared to be the hanging-wall of a lode was followed for some distance, but as the Grand Junction or Waihi Company's lodes have not been met with (although striking direct into this company's ground) the manager is of opinion that the lodes will not be found until a greater depth is reached, on account of the broken nature of the country. A total of 830 ft. of driving has been done during the year. An average of ten men have been employed.

Waihi Gladstone.—Operations in this mine (which is worked by a syndicate) have not turned out as succesful as was anticipated. The small five-stamp battery which the owners erected on the property was completed about the middle of the year, when crushing operations were commenced for the purpose of testing in bulk the value of the ore won from the different prospecting and development workings of the mine. The reefs vary from 1 ft. to 6 ft. in width at different points of the property. The method of treatment adopted was wet crushing and plate amalgamation. Up to the present however, the results obtained have not proved of a payable nature. The total quantity put through the mill was 400 tons of quartz from which 47 oz. 10 dwt. of gold was obtained; value, £115 3s. 9d. An average of six men were employed.

Waihi South.—All work in this mine is stopped for the present, pending negotiations with the Goldfields Diamond Drilling Company (Limited) for a series of boreholes to be put down on the property to locate any ore-body that may be traversing the ground at a depth previous to incurring a large expenditure in machinery, &c., to enable deep sinking to be undertaken. In the early part of the year work was carried on in the Waihi Grand Junction West Mine by this company, but when the aforesaid company stopped operations here, the Waihi South Company could not carry on the work they had on hand at the time on account of the large amount of water to contend with.

Waihi Consols.—This company is directing attention to boring with the object of discovering any lodes that may run through their property at a depth, and a contract was let in October last to the Goldfields Diamond Drilling Company (Limited) to put a hole down 1,200 ft. At the end of the year the hole had reached a depth of 262 ft.

Waihi Consolidated.—There has been very little work done on this ground during the year; a contract was let for boring, and a start was made with the old machine that was on the ground, but this not being good enough for the work, operations were temporarily suspended until one of the Goldfields Diamond Drilling Company's machines arrived.

Pride of Waihi.—There has been little work done on this ground for the year.

Ohinemuri River Syndicate Claim.—The syndicate have gone to considerable expense in the erection of houses and machinery, and although temporary trials of the machinery have been made, and also experiments to find out the best mode of treating the tailings, the work is practically at a standstill until a grinding-machine is installed. It is confidently assumed that the sands will then be treated efficiently and economically, and thereby a payable concern made of the venture. An average of ten men have been employed.

Waitekauri District.

Waitekauri Gold-mining Company.—Golden Cross Section.—Work here has been chiefly directed towards testing the reef at No. 7 level and prospecting the upper levels and the surface. No. 7 level: Crosscuts east and west were commenced from a point in this level 531 ft. northward of the main shaft. The eastern crosscut was driven 219 ft., and a chamber was then constructed from which to undertake boring operations. No. 1 borehole penetrated a total distance of 810 ft. below No. 7 level, at an angle of 72 ° across the footwall formation. The western crosscut was driven 147 ft., and No. 2 borehole was commenced here. 350 ft. was bored at an angle of 54 °, thus proving the hanging-wall side of the formation. No. 3 borehole was projected from the end of the western crosscut at an angle of 35 °. This work was discontinued when 120 ft. had been bored. For the purpose of further proving the formation, a fourth borehole has been commenced from a point on the surface 360 ft. eastward of the main reef. It is designed to cross the line of reef at a point 260 ft. north of the main shaft, or 271 ft. southward of the previous boreholes at a depth of 500 ft. below No. 7 level. No. 1 level: The main drive north on the reef has been extended 352 ft., making a total of 1,406 ft. north of the shaft. The ore opened up in the course of this work is not of a payable grade. The main crosscut west was extended with a view to locating parallel reefs. After reaching a point 645 ft. westward of the main workings, the work was suspended. Several rises and crosscuts were made at this level through large bodies of

low-grade ore. Empire Section.—Work in this section has been restricted to prospecting on the surface. It is now intended to commence operations from the Empire crosscut, on what is known as the Empire reef, by driving north and south. The Realm crosscut which was driven some years ago a total distance of 720 ft. eastward, is being reopened for the purpose of further exploring the ore-bodies then revealed. Old Waitekauri Section.—Prospecting is still being continued in this property. During the period under review, 947 tons of ore were produced from the Queen level for a return of bullion worth £3,245 1s. 9d. Further stoping on this block is now proceeding, eight men being employed. There were 5,024 tons of tailings treated, and 947 tons of quartz put through the mill for 3,959oz. of bullion of a value of £4,521 14s. 8d. the mode of treatment being wet crushing and cyaniding. £83,393 has been paid in dividends since commencing work. An average of forty-four men were employed during the year.

New Zealand Jubilee Mine.—This mine was under protection for six months, and during the remainder of the year the work was directed to extending the low level a distance of 630 ft., and driving the Horn level 310 ft. The low level is now in over 4,000 ft., but for the last 300 ft. the country driven through has been very broken, and not of a favourable description for the existence of gold-bearing lodes. An average of fifteen men have been employed.

A limited amount of prospecting-work has been carried on in the Hunuia, May Bell, Eclipse, and Starlight Claims, but up to the present nothing of importance has been discovered, and no returns of gold have been made.

Owharoa.

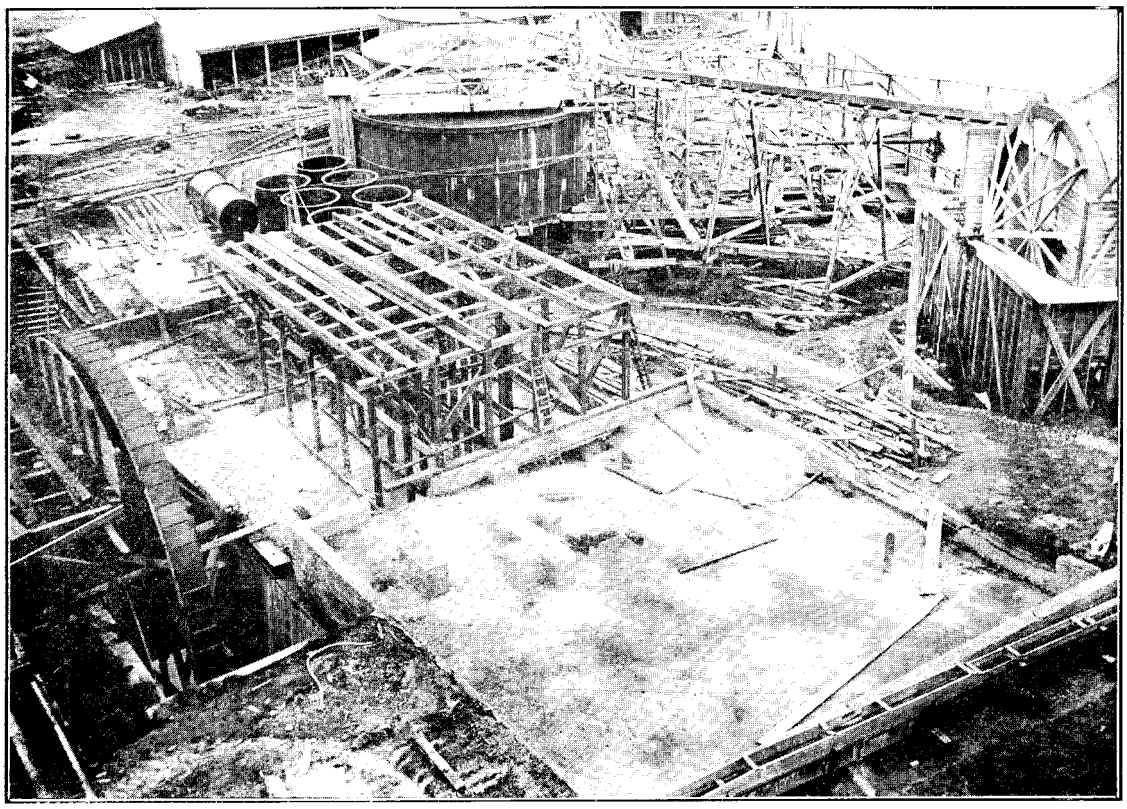
Ohinemuri Syndicate.—There has been no work done on this property during the year. At present the plant and buildings are being dismantled for removal.

Rising Sun.—Prospecting and development-work have been carried on with a limited number of men, the principal operations being confined to making a connection between No. 2 and No. 3 levels.

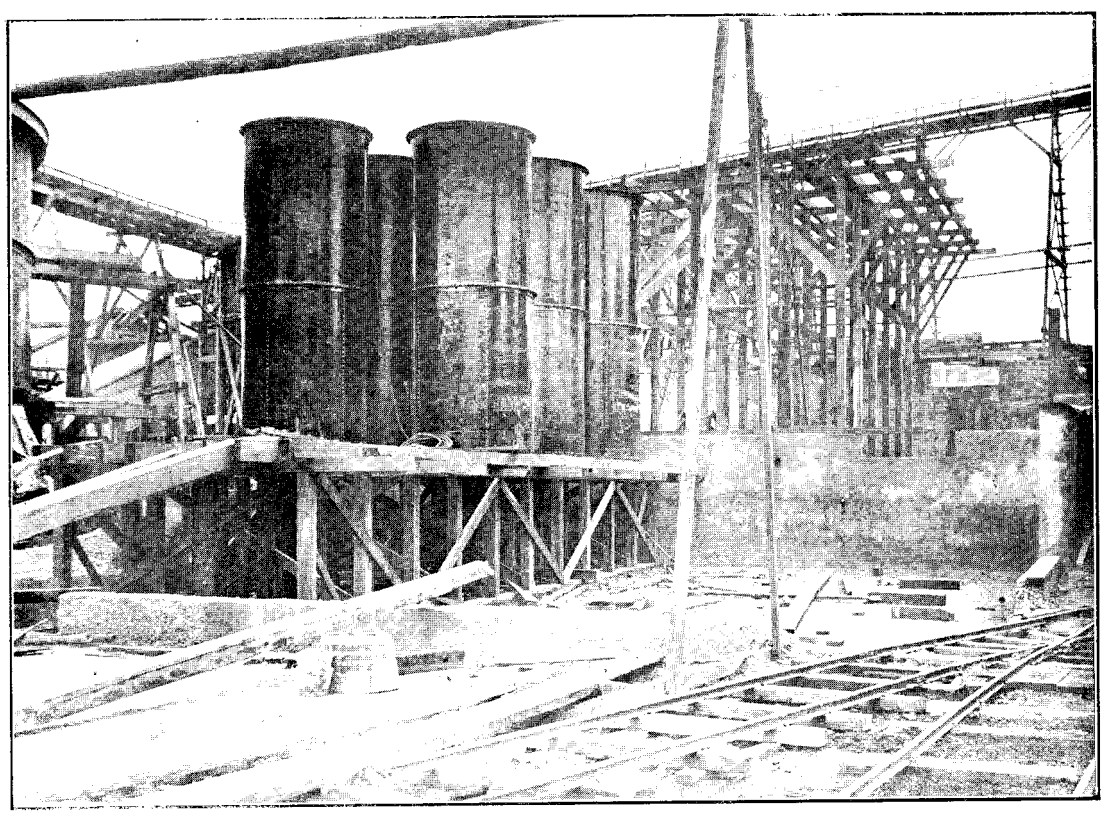
Karangahake.

Talisman Consolidated (Limited).—This company has vigorously carried on the work of opening up the mine, which has consisted in driving, sinking, rising, and stoping above the Nos. 8, 9, and 10 levels, and with a great amount of success. The quartz was mostly obtained from a rich shoot of ore that was followed down from No. 7 level, which produced 47,267 tons of quartz, and gave a return of 183,333 oz. of bullion, worth £94,134 7s. 11d., which no doubt left a good profit on the year's operations, but no dividends were paid in consequence of the company being in debt at the beginning of the year. Driving south on the reef at No. 8 level has been carried on almost continuously without developing any new ore-shoots. The country in this section of the mine is considerably disturbed, and the values are low. This drive is now getting under what is known as the Bonanza section, and higher values are expected. At No. 9 level sufficient driving has been done to prove that the payable ore-shoots met with on No. 8 level go down. These are now being stoped. On No. 10 level driving south was stopped early in the year, awaiting the completion of incline shaft from No. 8 to this level. Since the shaft was finished, the reef north of same has been stripped, and the leading stope driven. Stripping of reef south of shaft is in progress, and the values met with are higher than those found in driving. From the face of Woodstock No. 5 level driving south along reef was commenced and continued to a point where incline shaft will come down. This will be known as No. 11 level. Between the Woodstock boundary and present face good values were found; further driving is suspended, awaiting the completion of incline shaft to this level. The incline shaft from No. 8 level has been finished to No. 10 level, and is in good working-order. From No. 11 level a rise is being put up to No. 10 level to connect with shaft. 170 men were employed.

New Zealand Crown Mines (Limited).—Operations in this mine during the year have again been carried on with satisfactory results, the value of bullion obtained during the period under review being £78,279 12s. 1d. (an increase of £3,515 7s. 11d. on the previous year) which has enabled the company to pay the usual dividend amounting to £15,000 for the year. In the mine the main incline shaft has been sunk from No. 4 level a depth of 120 ft. on the underlie, making the total depth 506 ft., and at present, preparations are being made to open out No. 5 level from the bottom of the shaft. Here it is intended to instal the second plunger lift, which it is considered will be sufficient to cope with any water met with when the lode is intersected at this level. The No. 2 level south was extended a distance of 30 ft. on a small leader but without satisfactory results; the course of the drive was then altered to a south-easterly direction, where the main part of the lode was again picked up after driving 27 ft. When the level was extended 48 ft. from the point of intersection, 15 tons of quartz was broken out, worth about £2 per ton; after a further extension of 170 ft., the drive was stopped and operations directed to driving north of the crosscut on the lode. In this direction it was driven on for a distance of 176 ft., the average thickness of the lode being about 2 ft; 153 tons of quartz was broken out here for a value of £255. About 480 ft. from the shaft a crosscut was driven in a south-easterly direction 54 ft. without intersecting anything of value. In No. 3 level north very little mining has been done north of the shaft below the Waitawheta tunnel during the year. The total length of this level is 409 ft. The No. 3 level south was extended and from this extension 401 tons of quartz was obtained, worth £1,352. The average width of the reef was 4 ft. 8 in., and the total distance driven from the shaft is 1,945 ft. 9 in. A winze was sunk from No. 3 level, a distance of 91 ft. (the required depth for opening out No. 5 level), making its total depth 242 ft. A very large amount of driving has been done on the different levels during the year, and stoping operations carried on from No. 4 level below the Waitewheta main level to No. 3 level above that level. Owing to the gold not being evenly distributed through the quartz, the lode has been stoped out on the shoots of what was considered the payable ore, and the places where the lode is thin and poor were left in as pillars. This is a great support to the hanging-wall, but no doubt some of the pillars will be extracted, when the rich shoots of ore are worked out, in fact, some are being taken out now. An average of 242 men have been employed by this company during the year.



CONCENTRATES TREATMENT PLANT, WAIKINO BATTERY, IN COURSE OF ERECTION (WAIHI GOLD-MINING COMPANY).



CONCENTRATES TREATMENT PLANT, WAIKINO BATTERY, IN COURSE OF ERECTION (WAIHI GOLD-MINING COMPANY).

Comstock United.—This mine was under protection for a time. The main tunnel being driven over a distance of 1,700 ft. and no reef cut, the owner could not proceed any further without some assistance. He therefore applied to the Ohinemuri County Council and the Government for a subsidy to put in this tunnel a further distance of 600 ft.; this was granted, and the work is now in progress, and the drive extended 60 ft. Although a rubbly formation of quartz has been passed through, yet no defined reef has been met with. Three men are employed.

Woodstock Mine.—This property has been closed down for the greater part of the year. Although a considerable amount of money has been recently spent in prospecting and developing the mine and in alterations to the battery, the results obtained were not sufficient to meet the working-expenses, which were somewhat increased by having to pump the water and raise the ore, &c., broken out in the low level. The ore here was also of a less value than that obtained above the main adit level. I am informed there is every likelihood of the property going into liquidation or being merged into the adjoining properties. In the early part of the year while operations were carried on, 6,184 tons of quartz was treated for a return of 14,570 oz. 5 dwt. of bullion, value £9,680 12s. 1d. An average of forty men were employed during the year.

Several parties have been prospecting in the neighbourhood, but up to the present no new discoveries have been made.

Te Aroha.

Premier and Mammoth Claims.—This property has been continuously worked during the year, the principal operations being confined to the Premier section, where a good block of ground has been opened up at No. 2 level, the reef here varying from 4 ft. to 6 ft. in thickness, and where stoping operations are proceeding with payable results. In the Mammoth section a trial parcel of 60 tons was broken out of the reef and conveyed to the battery as a bulk sample to ascertain the value of the ore previous to connecting the mine with the county tramway by an aerial tram-line. The results of the crushing (I am informed) gave sufficient encouragement to have the work undertaken in the near future. Considerable improvements have been made in the battery by the erection of concentrating pans, &c., and it is also intended to increase the number of stamps by another ten heads and bring the battery thoroughly up to date for the necessary treatment of the ore. During the year 1,561 tons of ore was treated for a return of 1,728 oz. 9 dwt. of gold, value, £4,972 18s. 2d. An average of fourteen men have been employed.

Kia Ora Lead and Silver Mines.—There were two men employed on this mine in the early part of the year, and a parcel of ore was broken out and transmitted to New South Wales for treatment, which is said to have given as a result from £3 to £100 to the ton, but this apparently has not induced the commencement of active operations, as little or no work has been done on the mine since.

A limited amount of prospecting-work has been carried on in this locality during the year, but nothing of importance is reported to have been discovered.

Komata.

Komata Reefs Gold-mining Company (Limited).—Komata reef section: The chief work done in this portion of the mine has been the extension of the No. 4 level northwards towards the Te Ao Marama shaft. This was driven 612 ft. 6 in., making the total distance north of the main tunnel 950 ft., and leaving about 300 ft. to reach the shaft. A considerable amount of driving has been done in the south end of this section, but the results have so far given very little encouragement. Stoping has been carried on from two of the levels—viz., B level and No. 3 level—and has resulted in 2,340 tons of general ore and 14 tons of selected ore. The number of fathoms stoped was 323½, and the average width of the reef was 3 ft. 6 in. The total value of the ore obtained from this section was £7,711. Te Ao Marama section: A good deal of development-work has been done here during the year, chiefly on the No. 2 level northward. This has resulted in a very large tonnage of payable ore having been opened up. Nothing has been done on the lower levels, as it is the intention to open up these from the drive being advanced towards this section from the Komata Reef section. Stoping has been carried on from the Hopper, Smithy, No. 2, No. 3, and No. 4 levels. The total number of fathoms broken out was 1,013, which produced 10,931 tons of ore. Development-work produced 1,420 tons, making the total tonnage from this section 12,351; the total assay value of this was £33,642. The average width of the reef in this section was 5 ft. Battery: During the past year the capacity of the battery has been considerably increased by the addition of a 5 ft. Huntington mill and six extra vats, and by the raising of the sides of five of the slime-treatment vats. Also numerous small additions and alterations have been made to the plant. In order to provide ample power during dry weather, a 13 in. by 30 in. Marshall horizontal condensing-engine and a large loco.-type boiler have been installed. The tonnage treated during the year was 14,780, from which bullion to the value of £37,110 2s. 9d. was produced. Tram-line to battery: The grade of a portion of this has been altered, so that the trucks will run by gravity from the mine to the battery, where they are hoisted to the unloading floor by a hoist operated from one of the battery shafts. An average of ninety-two men have been employed during the year.

Byron Bay Mine.—A little work was done on this property which consisted of driving on the lode, where encouraging prospects were met with. This induced the holders to sink on it, but the winze was only sunk a few feet owing to a large quantity of water coming in which they were not able to cope with. Protection for six months was applied for and granted to enable them to raise funds to go on with the work. Two men were employed.

Just in Time Mine.—This claim has only been intermittently worked during the year, and I have not heard of any new discoveries being made.

Mistake Claim.—This is a claim lately taken up which adjoins the Te Ao Marama section of the Komata Reefs Mine, but so far little work has been done on it.

EAST COAST DISTRICT.

Mananu Mine.—This mine was under protection in the early part of the year, and when work was resumed, the reef was driven on at the No. 4 level for a distance of 155 ft., making the total distance driven on it at this level 210 ft. The reef is composed of hard blue mottled quartz containing a good deal of mineral. It is about 2 ft. in width, but not payable. At No 3 level the same reef was driven on for a distance of 252 ft., making the total distance 607 ft.; there was also a rise put up on it to No. 2 level, a distance of 63 ft.; the reef here would average 15 ft. in width, but there was not sufficient gold in it to pay. At the north end of the mine (on what is known as the Rapids section) a considerable amount of surface-work has been done on what is believed to be the continuation of No. 1 reef, and most of the ore broken out of those workings was treated at the company's mill. In following the reef down it got smaller and of less value and would not pay to work. A good deal of prospecting was done on various reefs, some of which looked very promising, but none were found to be payable. The mine and plant is closed down and is again under protection. 370 tons of quartz was treated for 166 oz. of bullion, value £333 17s. 1d. An average of six men were employed.

Whangamata Proprietary Mine.—There has been little or no work done in this mine for the last twelve months. The machinery, water-race, fluming, &c., have been sold and are being removed.

Chelmsford Mine.—The low level was extended in the early part of the year and the reef intersected. After driving on it for a short distance, the reef did not open out as well as anticipated. The mine was therefore closed down for want of funds, and has since been under protection for the last six months. An average of three men have been employed during the year.

Tairua Broken Hills Mine.—This property has been vigorously worked during the year with satisfactory results, a good margin of profit being left after all expenses were paid. The work generally has consisted in driving, rising, and stoping on the Blucher, Night, and Puon reefs, which have varied from 1 ft. to 3 ft. in width, and there is a considerable height of backs over the low level. In the intermediate level the Blucher reef has been extensively operated on and has yielded highly payable ore. The New Year and Wellington reefs have also been driven on, and the tests of the quartz made from time to time are such (I am informed) as lead the manager to believe they will pay handsomely to work. From the amount of payable quartz already won from the mine, the prospects generally throughout the workings appear as if it is reasonable to suppose that payable returns may be obtained for some considerable time to come. The mine is very convenient and cheaply worked. As the ore is broken out and passed into the shoots, it is run into the trucks, then along the low level and ground tramway direct into the battery. In the battery a Huntington mill was fitted up, which greatly assists in increasing the output. An auxiliary water-power is to be increased by lowering the Pelton wheel and tail-race. The mode of treatment adopted by this company is wet crushing, amalgamation, and cyaniding. During the year 6,355 tons of quartz was treated for a return of 12,281 oz., and value £21,146 18s. 8d., which enabled the directors to pay in dividends the sum of £10,306 5s. This must have been very gratifying to the shareholders.

Coronation Claim.—This property is situated south-east of the Tairua Broken Hill Mine, and was under protection during the early part of the year. At the expiration of that time a contract was let for extending the level a further distance of 200 ft. for the purpose of intersecting gold-bearing lodes, fully expected owing to excellent prospects which were obtained on the surface in trenching. Up to the present no payable discovery has been reported. From four to six men were employed.

Taniwha Mine.—This mine has during the year been worked on tribute by Mr. John Collins and party, the operations being chiefly confined to open-cut work on the large outcrop formation, which is composed of country rock interlaced with quartz stringers, carrying a fair percentage of gold. As this has to be carefully selected for treatment, it barely pays to work. A small crushing-plant is connected with the mine consisting of two stamps run by an oil-engine, but the quantity of crushing-dirt put through is small, only 42 tons of ore was treated for 82 oz. 1 dwt. of gold, value £190 1s. 1d. From two to three men were employed.

Prospecting operations have been carried on in the Gem, Myosota, and Golden Hill Claims, but up to the present no important discovery has been reported, and no returns of gold sent in.

Golden Belt Mine.—This mine has been continuously worked during the greater part of the year, the drive on the road-side (formerly termed the low level) was extended until the lode was intersected and driven on for some considerable distance. This varied from 2 ft. to 5 ft. in width, the quartz being very high grade. As broken out it was stacked at the entrance of the drive, pending the erection of the battery, which is being vigorously proceeded with. A main low level is now being put in some distance lower down the creek. It is intended to connect this level with the higher workings. An aerial tramline is in course of construction for the purpose of conveying the ore from the mine to the battery. The battery will consist of thirty head of stamps when completed, twenty of which were purchased from the Alpha Company, Waitekauri, together with the cyanide plant. These are now being removed to the site selected; the other ten head have been obtained from the Hauraki Associated Mine, Coromandel. Eight men were employed.

Chester Claim.—This ground was prospected for some time by Murphy and party, who treated a small parcel of 6 lb. of stone for a return of 22 oz. 15 dwt. of gold.

HIKUTAIA.

Maratoto Mine.—The work in this mine has been confined to the development of the Maratoto reef at Nos. 4 and 5 levels, where it has been driven on north and south of the crosscut for a considerable distance. At No. 5 level the reef is a strong body of stone varying from 8 ft. to 10 ft. in width, the quartz being of a kindly description in places, and I am informed the sulphide portion contains a fair percentage of the precious metal. A rise has been put up from No. 5 level to No. 4 level, a height of 120 ft., which has proved the reef between these levels, and given good ventilation. No bulk crushings

have been put through the company's battery during the year, the work being confined to developing the mine. An average of six men were employed.

Khartoum Mine.—A good deal of prospecting was done on this property during the year, the work being directed to driving on the reefs. In some places encouraging prospects were obtained, but the funds became exhausted, and the mine had to be closed down pending further capital being raised. Four men were employed.

Hikutaia Gold Syndicate Mine.—Only a limited amount of work has been done on this property during the year. A large amount of work was previously done on the reef, but the ore being low-grade, and not proving payable to work, the mine was stopped for the time being.

Omahu District.

Klondike Mine.—Operations in this mine were carried on during the greater part of the year with a limited number of men. The five-head stamp battery which the company erected on the property was completed in the month of May, when crushing operations were started. After putting a parcel of 125 tons through the battery for the unpayable return of 17 oz. 6 dwt. of gold, valued at £41 16s. 6d. (which was most disappointing), and there not being sufficient capital in hand to further develop the mine, work was stopped, and six months' protection obtained to enable the company to try and raise further funds. Four men were employed.

Sheet Anchor Mine.—This mine has been worked under option for some time, the work being chiefly confined to prospecting the ground in and about the low level, where it was anticipated the ore-body previously discovered on the surface—in a disturbed class of country, and from which good results were obtained—would be intersected at a depth. Although several small reefs and formations have been cut through (some of which carry a little gold) nothing that is considered of a payable quality has been met with at this level. Up to the present no crushings have been reported. Four men were employed.

We Three Claim.—This ground which is adjacent to the Sheet Anchor Mine has also been worked during a portion of the year. The operations being confined to the surface portions where disturbed outcrops were discovered, and from which 2 tons 4 cwt. of stone was broken out and treated at the Thames School of Mines for 92 oz. 7 dwt. bullion, value £37 12s. 1d. Two men were employed.

Puriri District.

Puriri Gold Estates.—This property is owned by an English company, and was closed down for a considerable period, but during the present year operations were again resumed under the general management of Mr. Stevenson, the company's representative, who directed operations on the property previous to going to England, and who apparently was not satisfied with the results obtained previous to closing down. I am informed that whilst in England Mr. Stevenson was successful in raising a substantial amount of capital to enable further prospecting and development-work to be undertaken on the property. At the start a good deal of preliminary work had to be done in repairing roads, levels, passes, water-races, &c., also the erecting of a new battery building and foundations, all of which have been completed. In the mines the operations so far have been of a prospecting nature ; in the Moncreith section a surface prospecting-level has been driven north-east of the main shaft to prospect the ground previous to unwatering the shaft and workings from deeper levels. In the Aurarius section an intermediate level is being driven on the reef from a pass between the No. 3 and Smithy level for the purpose of dividing the block and testing the value of the reef. So far no crushings have taken place. From six to ten men were employed.

Miner's Right Claim.—Two men have been employed on this ground during the year, the operations being confined to driving and stoping on several small leaders which have been intersected in the different workings, and from which 54 tons of crushing-dirt was broken out and treated at their small battery for a return of 28 oz. 11 dwt. of gold, value £78 10s. 3d.

Outside District.

Waihi Beach Claims.—On this property preliminary operations have been pushed on for some time. These consisted of the erection of workmen's dwellings, blacksmith's shop, and other necessary buildings, also getting timber and material on the ground for a shaft, which the company have decided to sink to test and prove the value of the reefs which have been discovered outcropping on the coast-line. The site for the shaft has been surveyed and a point selected on the high land, where the shaft will be sunk to a depth of 330 ft. before opening out on the hanging-wall side of the lode. A crosscut will then be put in, it is estimated 150 ft., to cut the lode. It is intended to sink the shaft a depth of 80 ft. by hand-power, during which the arrangements will be made for the purchase and erection of a pumping plant and winding-engine. An average of four men were employed.

Ohui, Te Puke, and Kati Kati.—Very little work has been done on any of the mines during the year.

Thames District.

Moanataiari Mine.—This mine changed hands twice during the year, It was first purchased by Mr. J. J. Craig, and an attempt was made to form it, together with the May Queen Hauraki into a company; but this failed, and in the meantime the tributers continued to work the blocks of ground let to them on tribute. In August, Mr. H. H. Adams purchased the property, and amalgamated it with the Alburnia. A company known as the Old Alburnia Company was formed, and operations were immediately commenced by extending the Moanataiari tunnel towards the Alburnia shaft, a contract being let for driving 300 ft. A lode was intersected near the end of this contract which varied from 2 ft. to 3 ft. 6 in. in width, and a little gold was seen in breaking out the quartz, a feature which is certainly most encouraging to shareholders. This tunnel is penetrating through unprospected ground at a con-

siderable depth, and should the company be fortunate enough in discovering a payable gold-bearing lode, it will give the Thames a fresh start. For most of the year the upper levels were worked by tributers, and the following are the returns: New Moanataiari tributers crushed 603 tons, and 51 lb. specimens, which gave 744 oz. 9 dwt. of gold, value, £2,021 6s. 4d. Old Alburnia tributers (since taken over from the New Moanataiari) 478½ tons, and 115 lb. specimens, for 781 oz. 6 dwt. of gold, value £2,089 7s. 1d. An average of fifty-four men were employed.

Kuranui-Caledonian Mine.—From the month of January to the month of July four wages-men were engaged prospecting near the shaft at No 1. level, in close proximity to where the big patch of gold was obtained in 1870; several small leaders were intersected, and although a few colours of gold were seen, yet nothing of a payable character was discovered. The boring scheme having now matured, work was suspended in order to await the results at a depth. The Goldfields Diamond Drilling Company (Limited) started work on the 12th September on the site chosen for the first hole, situated about 160 ft. north of the Moanataiari tunnel, and according to plans carefully prepared should intersect the Caledonian No. 1 lode at a depth of about 1,000 ft., at an angle of 82 °. For the first five weeks good progress was made, a distance of 1,041 ft. having been drilled, producing cores all the way. At this point the Caledonian No. 1 lode was met with, but was found to be of a rubbly nature, consequently, the diamond drill was unable to bring up cores. In the endeavour to do so, the crown head with the diamonds was lost in the hole, and efforts to withdraw the rods were unavailing. However, after some trouble, they at last succeeded in breaking them off, leaving 40 ft. in the bottom of the hole. From that time up to the present, the Goldfields Diamond Drilling Company (Limited) have been trying to recover this bit (which is valued at £250), but so far without success. Having failed to grip it by the usual method adopted in cases of this kind, they at last decided to enlarge the hole to 4½ in., and ream over so as to free the casing and are now getting on fairly well, the foreman being sanguine that they will be able to recover the diamond bit, and sink the hole the required depth of 1,500 ft. For a distance of 950 ft. of drilling the country was not what the miners term good, but in the bottom of the hole it is all that could be desired. Several assays taken of the country rock at a depth of 1,034 ft. gave a value of 11s. 3d. to the ton. This is encouraging, and it is reasonable to expect that when the core (or cuttings of the lode) is brought to the surface, it will also be found to contain good values. Crushings of 793½ loads of ore and 825 lb. picked stone were treated for 1,735 oz. 7 dwt. of gold, value £4,707 4s. 5d. Fifty-two tributers and three wages-men were employed.

Victoria Mine.—Operations during the year have been confined to tributers working from the 70 ft. level of Tookey's shaft and at the surface levels. Notwithstanding the large amount of work done, the tributers on the whole have not been successful in making any fresh discoveries, but are hoping to obtain better results in the year just entered. Boring operations on behalf of this company are now in progress. A contract was let to bore 1,000 ft. on the Thames Foreshore Claim at 12s. per foot. The borehole has now reached a depth of 380 ft., and when the 1,000 ft. is attained, another 500 ft. or perhaps 1,000 ft. will be let. Crushings: 170 tons of ore was treated for 212 oz. 9 dwt. of gold, value £586 4s. 6d. Eight men were employed.

Kuranui Mine.—The whole of the operations in this mine have been confined to the tunnel level, where driving and rising was carried on to some extent. The tributers lode has been driven on for a distance of 450 ft., and two rises put up on it to a height of 80 ft. The best prospects met with on this lode were in the drive, which yielded 12 dwt. to the ton. The highly mineralised ore met with in driving led the manager to expect that the ore would improve in value as the lode went downwards; but so far he has been a little disappointed. Twenty-two loads of ore was treated for 14 oz. 8 dwt., value, £34 13s. 8d. Twelve men were employed.

Waiotahi Mine.—There is little new to report from this mine since my last, operations being similar to those of the preceding year, the work consisting in following up small leaders and stoping them out. Some of these have been very rich around and in the neighbourhood of the shaft. No new development-work to any extent has been undertaken by this company for some time past. From various leaders operated on 865 tons of ore was obtained and treated at the company's battery for a return of 1,428 oz. 4 dwt. of gold, value £3,856 15s. 2d., which enabled the company to pay to the shareholders in dividends the sum of £900, making the total paid in dividends £40,200. Fourteen men were employed.

Fame and Fortune Mine.—Work in this mine during the year has been entirely confined to tributers, whose operations have been principally directed to driving and stoping on the hanging-wall portion of the Golden Age reef, from which 300 tons of quartz and 35 lb. of picked stone was obtained, giving a return of 364 oz. 11 dwt. of gold, value £937 1s. An average of nine men were employed in the mine and six wages-men in the battery, which is also employed in crushing for the public.

West Coast Claim.—This ground has been steadily worked during the year with two men, the operations being confined to driving, rising, and stoping on small leaders which have been opened up, and from which 43 tons of quartz was won and treated for a return of 57 oz. 15 dwt. of gold, value £155 18s. 6d.

Ballarat Claim.—This ground has been worked steadily by the owner (J. Brett), whose attention has been directed to driving, sinking, and stoping on small leaders, from which 28½ tons of quartz was obtained, which gave a return of 97 oz. 14 dwt. of gold, value £286 15s. 9d. Two men were employed.

Nonpareil L. H.—The work carried out during the past twelve months has been confined to tributers, during which period there has been an average of seven men employed working the several blocks of ground on reefs and leaders. The principal ore-bodies worked upon were the Liverpool Boys reef and Wade leaders. The Liverpool Boys reef is now being worked from the low level by a party of tributers, and since they commenced upon the reef they have met with fair results. The reef varies in size from 4 in. up to 15 in. Other tributers have also worked upon this reef in the upper levels during the year, but with poor results. Crushings: 140 loads and 7 lb. of picked stone was treated for 159 oz. 12 dwt., value £451 6s. Seven men were employed.

May Queen-Hauraki Mine.—This mine changed hands in the early part of the year, when the syndicate made an effort on two occasions to form a company, but failed. Then the work in the mine was directed to driving a crosscut at the No. 2 level Saxon shaft for the purpose of intersecting the No. 1 and No. 2 Cardigan lodes, which were successfully worked at the lower levels. When cut, the reef was driven on for a short distance, two loads of quartz being broken out and crushed for a value of £13 7s. 10d. The rest of the work was done by tributers who worked on various leaders. The total quantity of ore won from the different parts of the mine and treated was 514 tons, which yielded 769 oz. 7 dwt., value £1,949 13s. 5d. Eighteen men were employed.

May Queen Extended.—During the past year the works carried out in the mine have been the extension of the crosscut towards the Odd Fellows reef, driving and stoping on New reef east of old crosscut, and driving back west on New reef to connect with new crosscut driven in western section. A crosscut was extended to cut the Odd Fellows reef, but not meeting with the reef where it was expected to be cut, the directors decided to suspend work in this direction, and confine their attention to the driving and stoping on New reef east of crosscut. Since commencing this work a distance of 52 ft. has been driven, and a block of ground stoped out to a height of 60 ft. above the level by 115 ft. in length ; the average width of the reef has been about 10 in. The drive west on the reef has been extended 113 ft., and for the whole of this distance would average a width of 15 in. While operating on the reef in both ends of the mine, a few pounds of picked stone were occasionally secured, and colours of gold were to be seen frequently through the reef. 380 loads of quartz won and treated from all parts of the reef gave a return of 298 oz. 17 dwt. of gold, value £859 17s. 1d., which was barely payable, but the directors decided to go on with the stoping as an improvement in the quality of the ore might take place at any time. A party of tributers also crushed five loads of mullock for 2 oz. 2 dwt. A total of 385 loads was treated for 300 oz. 19 dwt. of gold, value £866 1s. 11d. Seven men were employed.

Thames Talisman Mine.—This mine was under protection for six months, and when operations were again resumed, the drive was extended a distance of 80 ft., where the reef was expected to be met with. Not finding it where anticipated, it was decided to extend the drive another 16 ft. Here small stringers of quartz were cut running at a long angle with the drive which is now supposed to be all that is left of the reef at this level. The upper level has also been cleaned out and repaired for a distance of 112 ft. It is stated that the Grand Trunk reef was worked here with good results in the early days of the goldfield. Four men were employed.

New Una Mine.—This is portion of the old Una ground. A company has been formed with the object of testing the ground at a deeper level, a main low level was started on the level with the Karaka Road, and has been driven a distance of 500 ft. From this level to the Una level (where the company worked the German and Loyalty reefs with very good results) there is a height of backs for 140 ft. Should the company be fortunate in getting payable gold here, it will help the Thames and restore confidence in this part of the district. This company is doing excellent work. Seven men are employed.

Gloucester and George Turnbull Claim.—This is being worked by a Glasgow syndicate, who have directed their attention to extending the low level to intersect the leaders in the Lincoln section. A little gold was frequently seen when they were working on the leaders, but as these are extremely small, only a very limited amount of quartz is obtained. To all appearance the syndicate have sufficient confidence in the mine proving payable, that they have sent from England a complete five-stamp battery, with the intention of erecting it near the mine. Two men have been employed.

Claremont Claim.—This is only one man's ground, but it is astonishing that not a ton of general ore has been crushed for years, yet specimen stone is frequently treated. 150 lb. of stone was crushed for 98 oz. 1 dwt., value £253 15s. 6d.

Fortuna Hauraki Mine.—Only a limited amount of work principally by tributers has been done on this property, the ground being under protection during the greater part of the year. The operations were confined to surface-workings on small leaders, from which 32½ tons of quartz and 30lb. of picked stone was obtained and treated for a return of 74 oz. 15 dwt. of gold, value £205 11s. 3d.

Waymouth Claim.—This ground has been steadily worked with two men, but the results obtained during the year have been very poor, 15 tons of quartz having been broken out and treated for a return of 6 oz. of gold, value £16 10s.

A little prospecting has also been done on the Ethel reefs and Anchor Claims, from which small returns of gold have been made, but nothing of importance discovered.

Otinui Consols Mine.—This property has been steadily prospected during the year, the operations being confined to driving a low level to intersect at depth the reef which I am informed was worked with good results some years previously. As the country which is now being penetrated is of a kindly description for gold-bearing reefs, the chances are that payable stone may be obtained at any time. It is estimated that this level will give about 60 ft. of backs on the main reef, which is expected will be met with in about another 40 ft. of driving. From two to four men were employed.

Tararu Creek Mine.—This mine has been under protection for the whole of the year, little or no work has been done on it.

Eclipse Mine.—This mine changed hands in the early part of the year and a company was formed. Since then the work in the mine has been directed to extending the low level to a point under where a chute of payable ore was worked in the upper levels. When this company started work, the crosscut had to be driven about 100 ft. to intersect the lode, and at the place where it was cut through, it was fully 6 ft. in width and heavily mineralised but of low grade. From the crosscut the lode has been driven on for a distance of 300 ft., with a varying width of from 2 ft. to 6 ft. It may be fairly expected that a large block of ground will be opened up here as it is said the gold was continuing downwards from the level above, and there is every possibility that it will recoup the shareholders for the outlay. Seven men are employed.

The Golden Drop, Argosy, Temple Bar, and Bullion Claims have also been worked intermittently with two men on each claim. Small returns have been obtained.

Puru Consolidated.—During the early part of the year work was carried on in this mine on behalf of the company, but as the returns obtained were not sufficient to meet the expenses, the company stopped all work on their own account and let the mine and battery on tribute to P. Mahar and party, who have since worked with a fair amount of success. The operations are chiefly confined to stoping out a block of ground over the back of No. 2 level, where the reef varies from 16 in. to 3 ft. in width. 415 tons of quartz and 100 lb. of picked stone was broken out and treated for 171 oz. 6 dwt. of gold, value £461 14s. 6d. Four men are employed.

Monowai Mine.—Operations in this mine were steadily carried on up till the month of September, but the ore got gradually of less value and not payable. Owing to the refractory nature of the ore, a feature which necessitated the shipment of the concentrates to New South Wales for treatment—thereby increasing the cost of recovery—and to the fact that a cheaper method has not been found, the directors became unwilling to proceed further, and sent instructions to stop all work, pending the sale of the property or other arrangements being made. 1,387 tons of ore was treated for £1,584. Thirty-five men were employed.

Sheridan Mine.—This property has only recently been taken over by a company, and work commenced on the 23rd November, 1903. The work in progress is the sinking of a winze from No. 2 level on a leader about 2 in. in width on the hanging-wall of the Sheridan reef. The winze has been sunk to a depth of 50 ft., and the lead has carried a little gold down for the whole of the distance. It is intended to sink the winze another 10 ft., where it will be driven on at what is termed the 70 ft. level. The pass is to be repaired for the purpose of getting the quartz down to the low level, where it will be conveyed to the company's mill without much handling. Should gold in payable quantities continue down to the low level, the work of opening up this section of the mine would be undertaken at once, as from this level to the top of the winze there is 190 ft. of backs. The prospects are certainly most encouraging for the new company. 5 tons of ore were treated for 10 oz. 17 dwt., value £33 1s. 10d. Four men are employed.

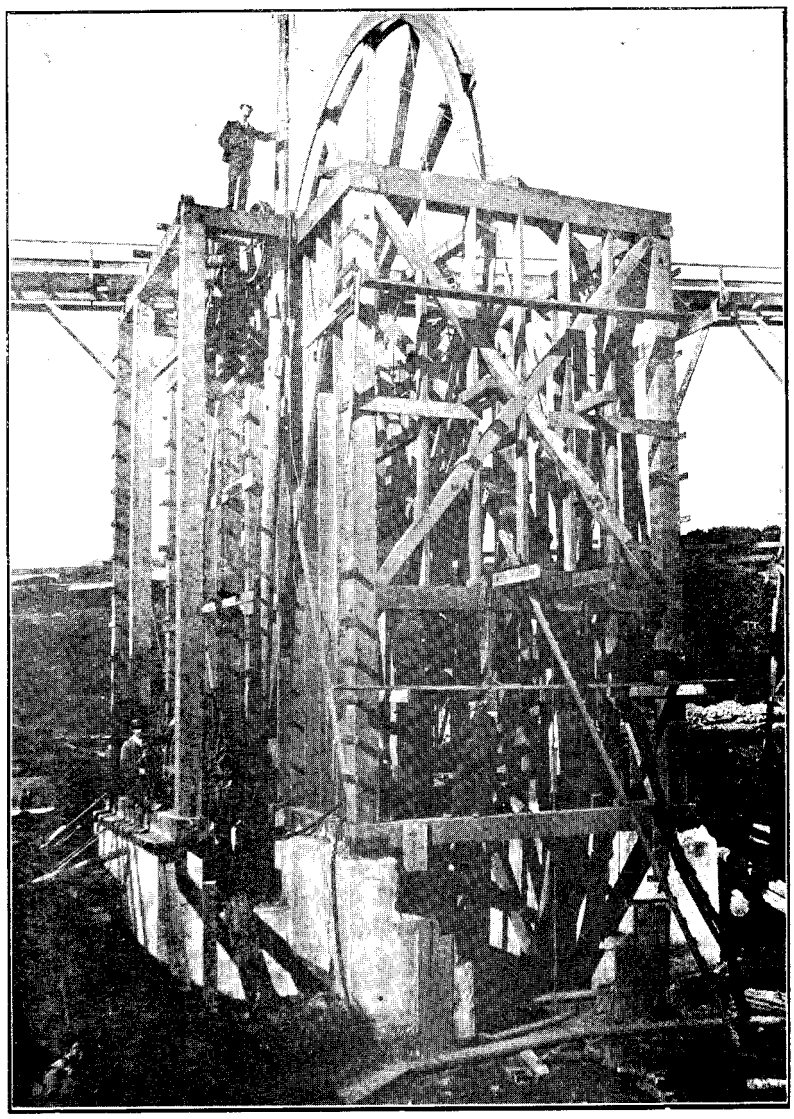
Mahara Royal Mine.—This company directed attention to opening up the mine by means of driving a low level which is connected by a short ground tramway with the battery. After driving this low level 520 ft., the lode was intersected, and was found to be from 4 ft. to 7 ft. in width, but the quartz was low-grade at this point. After driving on it for something like 120 ft., a patch of very rich ore was met with, which proved to be a chute of gold-bearing quartz that was worked on the upper levels. A small block was then stoped out up to the level above, and a winze was sunk on it a few feet, but meeting with more water than could be dealt with by hand-labour, this was stopped, and the company purchased the Golden Hill pumping and winding plant, which is to be erected on the surface over the winze to pump the water out. The management will thus be enabled to prove the lode below the level. Another chute of what is considered payable ore was discovered in extending the level, and stoping operations are now proceeding on this over the back of the level, pending the erection of the machinery. Crushing: 1,012 tons of ore was broken out and treated for 570 oz. of gold, value, £1,729. An average of twenty men have been employed.

Coromandel District.

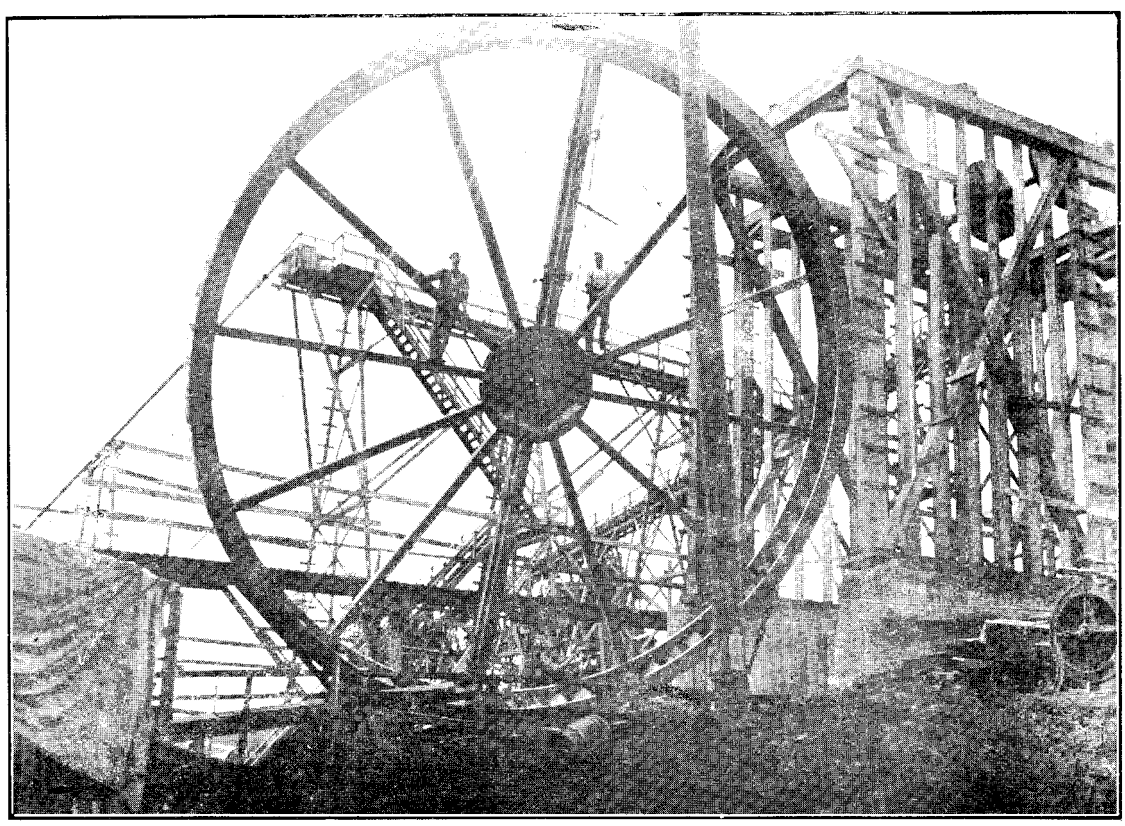
Old Hauraki (late Hauraki) Mine.—This property, which was formerly worked and owned by an English company, and from which splendid returns were obtained for some years, was, during the early part of the year, disposed of to a local syndicate, who have since transferred it to a company. Pumping and winding machinery have been erected at the shaft which the previous company had dismantled. As it was considered by them that the runs of gold below the surface levels were worked out, operations were stopped on behalf of the English company, and tributes let to seven parties of miners in various portions of the ground down as low as the 100 ft. level. In most cases, the men were successful in obtaining payable returns. All these tributes were let to expire on a uniform date, after which the mine was taken over by the present company in the month of April. Since that time operations have been steadily carried on in the mine in prospecting and developing the various reefs and leaders from the 100 ft. level upwards. The 12 in. Cornish pump which was put in the shaft has been employed in unwatering the workings and draining the same down to the 220 ft. level, where prospecting-works have been recently started, it being decided not to unwater the shaft any deeper for the present. During the period in which operations have been carried on by the new company, 345 tons of quartz and 673 lb. of picked stone was obtained and treated for a return of 1,436 oz. 5 dwt. of gold, value, £4,387 1s., and for the previous company, 253 tons 17 cwt., and 131 lb. of picked stone, for a return of 709 oz. of gold, value, £2,169 1s. 8d., making a total output from the mine for the year of 808 tons 17 cwt., and 804 lb. of picked stone, for 2,145 oz. 5 dwt. of gold, value, £6,556 2s. 8d. An average of twenty men were employed.

Bunker's Hill Mine.—During the past year operations in this mine have been confined to opening up and stoping on the lode known as the Tributers' (or Iona reef). In the early part of the year progress was retarded by the inability of the company to cope with the water with their machinery, and owing in a great measure to the Hauraki Company's pumping plant having been sold and removed. However, the company purchased the Blagrove's pumping plant and had it removed and erected at the Hauraki shaft, this course having been agreed to by the syndicate then in possession of the Hauraki Mine on certain conditions, which were successfully carried out, and work was again resumed at No. 1 level of the Hauraki with very good results. The following include some of the details of the work carried out: 325 ft. of driving on the lode, 100 ft. of sinking on it to connect the levels, and 1,500 ft. of stoping done. The quantity of general ore treated was 464 tons, and 1,541 lb. of picked stone, for a return of 2,589 oz. 6 dwt. of gold, value, £7,556 18s. 3d., and the amount paid in dividends was £1,333 6s. 8d., also, the total dividends paid since commencing work was £1,333 6s. 8d. Twenty-four men were employed.

Hauraki Freeholds Mine.—The company's work was chiefly directed to operating on the lode that had been successfully worked by the Bunker's Hill Company up to the Hauraki Freeholds boundary,



GROUP OF FOUR ELEVATOR WHEELS, DOUBLE LIFT, WAIKINO BATTERY, WAIHI GOLD-MINING COMPANY.



ELEVATOR WHEEL, WAIKINO BATTERY, BEING PLACED IN POSITION, WAIHI GOLD-MINING COMPANY.
DIAMETER, 35 FT.; BUCKETS, 2′ 0″ WIDE.

and this company commenced where the Bunker's Hill Company left off, after arranging with them to have the privilege of working through their ground on certain conditions. After starting work, a large slide was met with which cut off the reef downwards from the intermediate level, but the length on the lode extended as risen on; this has been successfully worked up till now, and there yet remains a large block of ground on the lode to work out. The company contemplates opening up the lode on the northern side of the fault at no distant date from the Welcome Find shaft which is their own property. 60 tons of ore and 239 lb. of specimens were treated for 636 oz. 1 dwt. of gold, value, £1,947 3s. 6d. Ten men were employed.

Kapanga Special Quartz Claim.—This property has been worked during the past year by tributers. The work done was on the Kapanga and Scotty's reefs, respectively 15 ft. and 25 ft. above the Driving Creek level. 468 tons of ore was treated, producing 154 oz. 1 dwt. of gold, realizing £378 18s. 8d. An average of five men were employed.

New Hero Mine.—This mine has lately been taken up, and comprises the hill known as Murphy's, in the Upper Township, Coromandel, where Murphy in the very early days obtained some very rich specimens from two distinct lodes. As these were only worked on the surface, several persons formed a good opinion of the ground and the gold going down. A syndicate was formed for the purpose of testing the lodes at a greater depth from a low level which was put in by another syndicate some years ago. Although the tunnel was put in a distance of 750 ft., the lodes that were worked above were not intersected, and the present shareholders are of opinion they would not cross the tunnel, and therefore decided to drive a crosscut at right angles to the tunnel at 650 ft. in, so as to cut the lodes on the underlie; this is now being done, and the country is all that could be desired. So far nothing of importance has been met with. Two men are employed.

Ruby Claim.—This ground has been steadily prospected with two men during the year, the operations being chiefly confined to extending a prospecting level in a north-east direction, with the expectation of intersecting at a depth on the underlie some of the offshoot leads from the Main Tokatea reef (or blow), from some of which (in the early days) fair returns were obtained at higher levels. Up to the present nothing payable has been discovered.

Golden Spark Mine.—This ground was taken up in the early part of the year by a syndicate whose operations were principally confined to driving a low level from the bed of the Whakaroa Stream for the purpose of intersecting the Bright Smile and other leaders which had been operated on by previous owners at higher levels with good results. After driving this level a distance of about 220 ft., the Golden Spark leader was intersected, and is at present being opened up east and west of the crosscut preparatory to stoping. Gold has been frequently seen in the stone, and the leader varies from 3 in. to 10 in. in thickness. A rise has also been put up on this leader at a point which connects with a winze previously sunk from the level above. This gives good facilities for working the block of ground, and drains off the water from the upper workings. It is also the means of giving good ventilation. During the year a small parcel of 5 cwt. of ore was treated at the School of Mines battery for a return of 3 oz. of gold, value, £8 12s. 6d. Five men are employed.

Hauraki No. 2.—Operations in this mine have been steadily carried on with two men, the work being solely confined to prospecting the different leaders from the surface level where the No. 2 leader has been exploited to a fair extent, and averages about 5 in. in width. Up to the present nothing of a payable character has been discovered.

South Kapanga Mine.—Work of a prospecting nature was carried on in this ground during the greater part of the year, but as nothing payable was found, and the funds ran out, operations were stopped pending the raising of further capital to carry on the work. No returns of gold have been obtained.

Kathleen Crown Mine.—The only work done on this property during the year has been confined to surface levels, where only a limited amount of tributing was carried on, and from which 2 tons of quartz was obtained and treated for a return of 7 oz. 8 dwt. of gold, valued approximately at £22 4s.

Sea View Special Quartz Claim.—The principal work done for the past year has been by tributers working in a level known as the No. 3 Smithy level, and the level above it. The quantity of ore raised has been 62 tons, which yielded 154 oz. 19 dwt. of gold, value, £423 0s. 7d. The work proposed to be carried out during the present year (1904) will be conducted on the same lines. I might mention that in the adjacent property, last worked as "The New Hauraki Gold Properties (Limited)" a large reef exists, which in all probability is a continuation of the Tokatea Big reef. No doubt, in course of time, the prevailing system of diamond boring will lead to this reef being proved at greater depth, and if this is successful, it is natural to think that similar work may be undertaken in the Sea View Special Quartz Claim. A considerable amount of work has been done in this claim by an English company, but without success. There are probabilities of tributers making discoveries in the upper levels of the Sea View as their tribute developments advance.

Harbour View Mine.—This ground, which was previously taken up and worked by a syndicate, was, in the early part of the year, taken over by a company, who have since secured the adjoining property known as the Pride (late Hauraki Associated). The work in the mine for some time was directed to extending the No. 5 level in the Harbour View section, where the Simpson leader was intersected, and on which a rise was put to the number 4 level a height of 75 ft. on the underlie. This has opened up a large block of ground on the leader which varies from 3 in. to 10 in. in width, and at times produces picked stone of fair quality. Stoping is also being carried on from an intermediate level from the rise. On the cross-leader work is being done at No. 4 level, and a limited amount of crushing-dirt obtained. It is the manager's intention to extend this level into the Pride section, to prospect and develop the various leaders from which a considerable quantity of gold was obtained by the previous owners. During the year 17½ tons of quartz and 155 lb. of picked stone was treated for a return of 185 oz. 5 dwt. of gold, value, £483 5s. 1d. An average of seven men were employed

A little prospecting has also been done in this locality on the Stanley and Peveril Claims, but nothing of importance has been discovered, and no returns of gold made.

West Tokatea Mine.—Very little work has been done on this property, which has been under protection for most of the year pending a reconstruction of the company. This, I am informed, has been successfully arranged. Preliminary operations are proceeding with a view to further developing the mine.

Queen of the North Claim.—In the early part of the year this ground was for some time unoccupied, but was subsequently taken up by M. Kemner, and is at present worked by two wages-men and two tributers, the work being confined to driving and rising on small leaders from which rich stone has been obtained. So far, no stone has been crushed on behalf of the present owners.

Forest Queen Mine.—Prospecting work has been steadily carried on in this mine with two men in expectation of discovering a payable run of stone. Although a little gold is occasionally seen, yet up to the present, the general ore has not been considered worth crushing, or of sufficient value to warrant the expense of taking it to a battery for treatment. This latter is a heavy item on account of the position of the mine. No crushings have taken place on behalf of the present holders during the year.

Royal Oak Mine.—Development-work has chiefly been confined to further testing the Tribute reef between Nos. 3 and 7 levels, but without much success, only one small block proving payable between Nos. 5 and 6 levels. 1,766 ft. have been driven and stoped altogether on this leader, but nothing of importance has been opened up. During the winter months the battery was kept fully employed on ore from the old stopes between Nos. 3 and 6 levels, the bulk coming from where the rich quartz was won in 1898 on the Tribute leader. The ore, though of low grade averaged between 10s. and £1 per ton, and paid a few shillings over working-expenses, the cost of mining, tramming, and crushing not exceeding 8s. 6d. per ton. The general quartz, after all the stone showing gold had been picked out for separate treatment, was worth very little, averaging only about £1 10s. per ton. Tokatea reef: 562 ft. of driving and stoping has been carried out here as well as several hundreds of feet of old workings re-opened, but nothing payable was discovered. The old stopes in the lower levels were also tested, but with unpayable results. At No. 7 (lowest) level the shaft which is down 180 ft. was kept free of water until March, when the water became troublesome. Operations had to be suspended and the pump withdrawn. The 180 ft. level below No. 7 was extended east a total distance of 405 ft. from the shaft; the reef was poor and unpayable for the 110 ft. of driving done during that period. A little gold was obtained west of the shaft 50 ft. below the floor of No. 7, but not payable. Turnbull's leader: This is a small branch vein running off from the Tribute reef at No. 5 level, on which 123 ft. of driving and stoping has been done, but it gave a small return and poor value. No. 3 reef: This reef has been driven on for 128 ft. south from "A" level; some rich gold was obtained from it on the upper levels, but no gold was seen here. The new ore-body exposed at No. 6 level in the crosscut driven from the drive on the Tokatea reef to intersect the tribute reef has also been further tested with more success. It has been driven on at No. 6 level for a length of 76 ft., and stoped 274 ft., with what may be termed payable results; this vein seems to be a dropper from the Main Tribute leader, starting just below No. 5 level, dipping away northwards on its footwall side; at the No. 6 level it is a good strong lead, and the country encasing it is excellent. Being within the parallel zone of where the rich patch was won in the Tribute reef, there is a chance that some good stone may be secured here. Several other likely looking ore-bodies have also been tested during the last twelve months, but with the one exception, nothing of much value was obtained. From May to November the battery was running almost full time, chiefly on low-grade ore from old stopes. Since May (when there was plenty of water for motive power to drive both the battery and rock-drills) the mine has been able to pay its way, but for the previous four months a total of £3,000 was spent out of capital for no return. Crushings: 2,330 tons 10 cwt. of general dirt and 14 cwt. 3 qr. 7 lb. of picked stone was treated for 1,787 oz. 1 dwt. of gold, value, £4,663 13s. 3d. The average number of wages-men employed were thirty-six. also twelve tributers.

Whangapoua Claim (late Lillis's).—This mine, which is situated on the Kauri Freehold Gold Estates property, has been steadily prospected by the present holder, P. Ryan, who has previously had fair returns from the ground, but during the past year, only a small parcel of 10 cwt. was treated at the School of Mines battery for a return of 2 oz. of gold.

Vaughan Claim.—This ground has been worked by the owners (Messrs, Danby and Kirk) whose attention has been directed to driving and stoping on some of the small leaders which traverse the property, and from which a small parcel of 1 ton of general ore and 6 lb. of picked stone was treated for 42 oz. 2 dwt. of gold, value, £115 15s. 6d.

Prospero Claim.—Prospecting-work has been continuously carried on in this ground with two men, but up to the present nothing payable has been discovered.

The Castle Rock, Ternians, and Pukewhau Claims have also been intermittently prospected, but no discoveries have been reported.

A little prospecting has also been carried on in the Manaia District, but so far without success.

Omoho Creek.—In the early part of the year a little activity was displayed in this locality through the discovery of gold-bearing quartz on the surface, which led to the marking-out and taking-up of several claims. It was considered the stone discovered was shed from a large ore-body at a higher elevation, and although a fair amount of prospecting by driving and trenching has been done—more especially at the Rangatira and Huruhuru Claims—I am informed no reef of a similar nature of quartz has so far been discovered. A parcel of 44 lb. of stone was treated from the Rangatira mine for 3 oz. 16 dwt. of gold, value, £10 9s.

New Four-in-Hand.—In the early part of the year protection was obtained for the purpose of raising capital to put in a low level to intersect the reefs that had been operated on by the company in the upper levels, and with a certain amount of success. During the period of protection, two men were employed working upon the Tainui leader, and from here good results were obtained—8 tons of quartz

yielding 160 oz. of gold. Two small blocks of ground which had been left in on account of the water percolating through from the surface during the wet season have also been taken out, and 20 tons of quartz from here gave a return of 58 oz. of gold. The new level mentioned has also been commenced from the Waikoromiki Creek side of the range and from the opposite side to that from whhich the company conducted their previous operations. The object of driving this level is to eventually cut the Tainui I. H. reef, but as the drive will transverse entirely virgin country, it is confidently expected that other known reefs as well as some not yet discovered, will be met with, and that good results will follow. A distance of 1,100 ft. has to be driven before the Tainui I. H. reef will be intersected, and 350 ft. has already been driven. 28 tons of quartz and 85 lb. of specimens were treated for 218 oz. 14 dwt. of gold, value, £632 13s. 10d., and an average of five men were employed.

New Tandem Claim.—This property, which is a small area of 10 acres, adjoins the New Four-in-Hand Mine, and has been steadily worked during the year with satisfactory results. The operations are chiefly confined to driving and stoping on the Tandem reef, which varies from 3 in. to 12 in. in width, and produces at times picked stone of good quality. During the year 10¼ tons of general ore and 118 lb. of picked stone was obtained and treated at the Four-in-hand mill for a return of 257 oz. 11 dwt. of gold, value, £744 5s. 6d. From two to three men were employed.

White Star Mine.—This property, on which a good deal of work was previously carried out by an English company during the boom, has recently been taken up by a local syndicate, and work of a prospecting nature has been steadily carried on. Although a little picked stone has been obtained, yet nothing that might be considered payable has so far been discovered. 14 lb. of srone was treated at the School of Mines for a return of 3 oz. 19 dwt. of gold, value, £10 17s. 3d. From four to six men were employed.

Cabbage Bay Extended.—A limited amount of prospecting-work has been done on this property, on which a small battery is erected, but up to the present nothing of importance has been discovered, and no returns have been sent in. Two men were employed.

Macaronic Mine.—Operations in this property during the year have not been so successful as could be desired for the shareholders, who, after having had several of the different reefs and leaders traversing the property prospected with results that were considered would be payable, decided to erect a five-stamp battery. This was completed about the month of May, when crushing operations commenced, but as the returns obtained were not sufficient to meet expenses, the battery was closed down, pending further prospecting of the property. During the time the battery was run, 55 tons of quartz and 5 lb. of picked stone was treated for a return of 21 oz. 15 dwt. of gold, value, £57 3s. 2d. From four to six men were employed.

Kuaotunu District.

Great Mercury.—All tributing and working in the surface-blocks of the Great Mercury Mine ceased in October last. At that time the proprietors of the mine started a low level in what is known as Murray's Gully, on the boundary between the Irene and Great Mercury Mines, the object being to work both mines from this level. The work of driving this tunnel has been pushed ahead steadily with three shifts, the face being now in a distance of 520 ft. Several reefs and leaders have been cut, but so far none of them are gold-bearing. The intention is to keep driving on for the present, and if nothing important is discovered, to come back and drive on some of the reefs already cut.

Waitaia Mine.—There is little change to note since my last report. This mine has been continuously worked during the year, and regular monthly returns have been steadily maintained. The operations during the period under review have been confined to driving and stoping on the Waitaia reefs, at different points from the No. 5 level upwards. The reef has varied from 4 in. to 15 in. in width, and has been well opened up at the various levels, but being small, necessitates a considerable area of ground being gone over to keep the battery crushing. During the year 1,072 tons of quartz was broken out and treated at the company's mill for a return of 1,611 oz. 14 dwt. of gold, value, £4,537 2s. 3d. An average of twenty-four men were employed.

Handsworth Mine. This ground has again been successfully worked during the year by the owner (L. Woodcock), who directed his attention to stoping on the runs of gold that have been cut at the various levels in his mine, and from which excellent results have been obtained. Forty tons of general ore was treated for 391 oz. 2 dwt. of gold, value, £993. Two men were employed.

A limited amount of prospecting-work has been carried on in this locality in the Juno, Miny, and Hosie Claims, but nothing is reported to have been discovered.

Gumtown District.

Kapowai Mine.—This property has changed hands lately, and the purchasing syndicate lost on time in commencing work. It is confidently considered that the mine can be made to pay as all the ore previously crushed was of high value. Under previous ownership, the mine was only worked intermittently. An average of four men are being employed. 276½ tons of ore was crushed for 233 oz., value, £547 11s.

Welcome Jack Mine.—This mine changed hands in the early part of the year, and the owners have been stoping out a block of ground on the main leader, between Nos. 2 and 3 levels. I am informed payable ore has been broken out and treated. The leaders being small, only a limited amount of quartz can be obtained by two men, but being convenient to the battery it pays to work. 123 tons of ore was crushed for 282 oz. 4 dwt., value, £539 11s. 5d.

Big Beetle Mine.—It was fully expected that when the company got their battery erected good returns would be obtained, but the results proved disappointing to some of the shareholders, although the quartz yielded nearly 2 oz. to the ton. This, under fair average conditions, should have been most encouraging, but the trouble is that the mill only consists of two stamps, and in consequence, the quantity of quartz put through is very limited. Still, there is a fair prospect of the mine continuing to pay for

some time to come in a small way, as I am informed a new leader has been lately discovered carrying fair gold. 235 tons of quartz were treated for 458 oz. 2 dwt. of gold, value, £1,353 1s. 7d. An average of six men were employed.

GREAT BARRIER ISLAND.

Barrier Reefs Mine.—There has been little or no work done in the mine during the year, but the company had 782 tons of tailings treated for 948 oz. of bullion, value, £190 2s. 2d.—something near 4s. an ounce.

Sunbeam Mine.—This ground was worked for a time during the boom, and although it was said good prospects were met with, yet it was allowed to come to a standstill. It was again taken up last year. Then the present company got possession of it, and have since done a little prospecting on the property. The results obtained have apparently satisfied the company that what will prove a payable concern has been got, and in consequence, they have purchased the Ethel Reefs battery at Thames, which is to be removed and erected near the mine.

ACCIDENTS.

I am sorry to have to report that eight fatal accidents happened in this district during the year, this being six in excess of the preceding year—the lowest then recorded for some time. It is very hard to account for so many; in one case it was proved the manager was negligent, but in some of the other cases the men themselves were in my opinion greatly to blame in not taking greater care for their own safety. These fatalities should act as a warning to workmen and officials generally.

Twenty-three other accidents were reported as being considered serious at the time by the different managers of mines where such occurred, all of which were inquired into and reported on in the usual way.

Fatal Accidents.

Date.	Name.	Name of Mine.	Cause.
March 9	Martin Dale ..	Waihi, Waikino Mill ..	A beam fell on him while at work in the mill.
,, 11	Alexander Crosbie..	Talisman Extended ..	Killed by an explosion of supposed missed shots in drive.
April 6	J. J. Landrigan ..	Waihi	A bucket fell on him while working in a winze.
May 8	W. N. Parry and W. J. M. Cornthwaite	,, ...	Fell off ladders in No. 5 shaft, a distance of 90 ft.
Nov. 13	Joseph Richards ..	New Zealand Crown Mine	Killed while working in a stope. Timber overhead gave way.
Dec. 7	J. F. Middleton and Angus McCole	,,	Killed by a truck falling down No. 1 shaft while they were working in the bottom.

I have, &c.,
JAMES COUTTS,
Inspector of Mines.

The Under-Secretary, Mines Department, Wellington.

Mr. ROBERT TENNENT, Inspector of Mines, Westport, to the UNDER-SECRETARY FOR MINES, Wellington.

SIR.— Inspector of Mines' Office, Westport, 30th March, 1904.

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 December, 1903 :—

QUARTZ-MINING.

BLENHEIM.

Wellington Mine.—This property is at a standstill.

Jubilee Mine.—This mine worked continuously until the close of the year, when operations were suspended, pending the amalgamation with the Luck at Last, and Wellington companies, and reconstruction of the company. The services of Mr. Evans, manager, are still retained on the property, and he anticipates that the driving of a low level to prove the reef at a lower depth will be commenced at an early date. 1,711 tons of quartz was milled which yielded gold to the value of £1,957 7s. 10d.

Arm Chair Creek.—The only progressive work in this creek is the driving of a low level in the Duke of Cornwall property by Clow and party.

HAVELOCK.

Golden Bar.—Further operations on this property have been abandoned.

Mining on the Wakamarina Valley is still confined to a few fossickers.

COLLINGWOOD.

Golden Ridge (Taitapu Gold Estates. James Carroll, Mine-manager).—Operations on this property comprise two separate mines locally known as the Anthill and the Golden Ridge. The surface-blocks having become partially exhausted on the Anthill section of the property, operations are directly confined to driving No. 3 level from the bottom of No. 2 winze to connect with No. 1. Stone for milling purposes will be available on completion of these drivings. Steam-driven hoisting and pumping installation is nearly completed. On the Golden Ridge section, all work is suspended, with the exception of a few miners driving and stoping in the New Find. Developments at Anthill comprise driving and crosscutting 140 ft. and sinking 40 ft.; Golden Ridge, crosscutting 1,000 ft.; and New Find, crosscutting and driving 700 ft. The twenty-head stamp mill is in good condition under the charge of Mr. F. Giles. The mines throughout are carefully timbered and ventilated.

Golden Blocks (Taitapu. Frank Johnson, manager).—Mining operations have been steadily maintained during the year, and the stone milled (2,409 tons) yielded a gold-value of £8,230. Practically all the milling-ore was mined from Nos. 1 and 2 levels, but chiefly from No. 2, as operations on No. 1 are confined to the employment of two men; while the work in connection with No. 3 low level is strictly of a development character. The reserve of milling-ore has been specially kept in advance of requirements during the past four years, but the recently extended explorations have not been favoured with the success anticipated. An extended privilege adjoining the now operative property, having been recently acquired from the Taitapu Gold Estates, systematic prospecting is actively proceeding, and the results so far obtained exhibit favourable promise. Developments comprise driving and crosscutting 1,600 ft., and raising and sinking 850 ft. Timbering and ventilation receive special attention, and the operative plant is strictly kept in good order.

WESTPORT.

Red Queen (Mokihinui).—This property is worked by a party of tributors (three men), who, at the date of inspection were sinking a winze on a small leader from the surface-level. The ground was securely timbered.

Lady Agnes (Mokihinui).—As the result of unsatisfactory crushing further operations were suspended, and prospecting was commenced on an outcrop 200 ft. above the old working.

Britannia Mine.—Mining operations have been actively carried on during the year; the stone milled (504 tons) maintaining an average yield of 11 dwt. 3 gr. per ton, which gave a small profit over working-expenses. The stone milled was chiefly won from Nos. 4 and 5 levels which are driving on a thin vein overlapping the original reef. The extension of these drives is considered to junction with the rich stone formerly worked on the upper levels. With the increased water-supply for motive power now available, it is intended to increase the milling-power, and treat the large bodies of low-grade ores now exposed. The ground is carefully timbered and well ventilated.

Stony Creek.—The operations formerly carried on by this company are suspended, and Mr. Thornhill Cooper and another miner are doing some surface-prospecting.

Alpine Extended (Lyell. William Prince, mine-manager).—Notwithstanding the varied mining operations that have been persistently carried out north and south at depth on the No. 12 levels, the development so far attained has been rather of a disappointing character, and must fail to meet the anticipations of the shareholders. In driving northward irregularity in width and position of the reef were the chief characteristics met with, while the values obtained were not of a high standard, but as the face is extending the prospects assume a more favourable promise. In driving southwards on No. 12, a block of stone 46 ft. in length and varying in width from 1 ft. to 3 ft. was intersected at 280 ft. from the shaft, but was eventually cut out by a decided break in the country, and was replaced by a narrow lead 2 ft. wide and carrying fair gold. Driving was further continued on this stone for 91 ft., the result being that it thinned down to 12 in., and during the last 40 ft. of driving, the lode maintained no permanent change. In taking a review of the general conditions and contour of the auriferous country recently developed north and south on the No. 12 level, the irregularity of formation met with in the varied drivings, risings, and sinkings, indicates that movement of considerable magnitude has taken place, and unless unforseen developments occur in the geological formation of the lode at depth, the future prosperity of this mine cannot be regarded as encouraging under the existing conditions. The workings generally are in good order, securely timbered, and well ventilated.

The Italy Syndicate (late Tyrconnel).—This property is now owned and worked by a private party of four men, under the title of Kelly and party. Since taken possession of by this syndicate, working conditions have received strict attention, and development has been kept well in advance, but progress is much retarded by the very unsatisfactory means of conveying material by road. There was crushed 133 tons of ore which yielded a gold-value of £1,787.

BOATMAN'S.

Kirwan's Reward.—Respecting the progressive operations in removing and milling the broken quartz from this peculiarly intermixed formation, subject-matter of importance is practically nil, and so far as clearing the crown of the Victoria Range is concerned, indications of the "parent reef" have not been discovered. The fifteen-head stamp mill has been actively worked during the open season, with a gold-value of £7,164 fron 4,814 tons treated.

Lady of the Lake.—Not visited.

Welcome.—Operations were confined to stoping the quartz exposed above the low-level tunnel, Specimen Hill, and the No. 5 level, Welcome, besides which, a winze was sunk 115 ft. to connect the intermediate and low levels with the object of locating the position of the stone northward. During the first nine and a half months of the year the company mined and milled 1,445 tons of quartz, which yielded

546 oz. 5 dwt. 21 gr. of gold, valued at £2,247 3s. 4d. The coarse sands cyanided, amounting to 1,044 tons, yielded gold to the value of £1,089 8s. 9d. During October, the whole mine and plant were let on tribute to O'Leary and party who up to the end of the year had mined and milled 185 tons of quartz for a return of 271 oz. 8 dwt. 21 gr. valued at £1,097 7s. The sands discharged to the cyanide plant were still under treatment at the end of the year. The Welcome Company has been absorbed by the present company, the Consolidated Goldfields of New Zealand (Limited), so that the former has now ceased to exist. The tributers will continue mining and reduction operations as heretofore.

REEFTON.

Wealth of Nations.—Practically there has been no development-work of any description done on this property during the period under review, owing to the unsatisfactory conditions under which material is raised and lowered on the inclined winding-shaft, as the power of the old overshot water-wheel having attained its maximum hoisting-capacity in depth, future developments will be maintained from the Energetic shaft. Stoping has been carried out from the 350 ft. (No. 2) level down to the 800 ft. (No. 6) level producing 12,385 tons of quartz, which when crushed yielded bullion to the value of £14,296 7s. 3d. by amalgamation, and concentrates to the value of £1,094 9s. 4d. were sold to the smelter. At the cyanide-works 8,645 tons of sands, representing 69.8 per cent. of the tonnage milled, was treated, and yielded bullion to the value of £5,061 3s. 11d. or 11s. 8·508d. per ton. Of this amount 2s. 11·047d. was absorbed in working-costs, leaving a profit per ton treated of 8s. 9·461d. The working-costs of this mine, amounting to 17s. 8·456d. per ton treated are made up as follows: Mining, 11s. 9·766d. per ton; milling and concentrating, 2s. 6·507d. per ton; cyaniding, 1s. 11·704d. per ton; office and general expenses including bullion and assay charges, 1s. 4·479d. per ton. Battery and mining equipment remain unaltered. Energetic shaft: The shaft has been sunk from a depth of 831 ft. to 1,369 ft. at which point the last set was placed in position on the ninth October. Since then the brace of the shaft has been raised 8½ ft. to its permanent level: making the actual winding-depth 1,377.5 ft. Directly sinking operations were completed, driving was commenced to cut out a chamber at a vertical depth of 125 ft. below the bottom level (No. 6) of the Wealth of Nations, when crosscutting was continued 126 ft.; but the computed distance to strike the reef will probably not be less than 220 ft. Considerable alterations and improvements have been effected on the surface, and good headway made with the permanent equipment. An exterior-fired multitubular boiler, 5 ft. diameter, by 16 ft. long with steam-pressure of 140 lb. has been suitably installed. The winding-engine is horizontal with two high-pressure cylinders—18 in. in diameter with 36 in. stroke—and is built on the direct coupled Tangye girder principle with parallel drums. The poppet-head gear, 37 ft. 6in. in height, is also substantially erected. The Hirnant air-compressor, designed for rock-drilling purposes, is a horizontal single cylinder, 13 in. in diameter, with air-cylinder 14 in. diameter. The whole plant is spaciously and comfortably housed. Future operations at this shaft will be as follows: When the reef is encountered on No. 7 level it will be driven on in a southerly direction towards the present Wealth of Nations incline shaft, and as soon as possible the shaft will be further continued another lift of 125 ft. to No. 8 level. The development-work throughout will as far as possible be conducted by rock-drills so as to hasten the developments, as the future prospects of the Wealth of Nations Mine will depend entirely upon the manner in which the next levels open up. Should they turn out well, the surface reduction-works will have to be altered to suit.

Golden Fleece.—During the period under review a large amount of development-work has been carried out, principally on levels Nos. 11 and 13 comprising driving and crosscutting, 1,392 ft.; raising and sinking 678 ft.; besides which the main shaft was sunk from No. 12 to No. 13 level, and the necessary connections made. Stoping has been carried out in a very general manner from levels Nos. 13, 12, 11, 7, 6, 5, 4, and 3, a very large amount of ground having been gone over to provide the tonnage milled. The quartz has maintained its characteristic irregularity during the year, the stone cutting out and coming in, both horizontally and vertically, with great rapidity. These sudden changes of formation necessitate the removal of a considerable quantity of barren ground to avoid missing small blocks of quartz, and to provide ventilation requirements. During the year 14,133 tons of quartz was crushed yielding bullion to the value of £21,978 3s. 5d., besides which sulphurets to the value of £1,436 14s. 7d. were sold to the smelter. At the cyanide-works 9,580 tons of coarse sands was cyanided, representing 67·785 per cent. of the total crushed. This yielded bullion to the value of £3,381 19s. 6d. Of this amount 2s. 3·937d. per ton was absorbed in working-costs, leaving a profit of 4s. 8.789d. per ton. The total working-cost of this property amounts to £1 5s. 7·942d. per ton milled. This high cost is accounted for by the very mean width of quartz stoped. No alteration of importance has been made in the surface equipment of this mine during the last twelve months.

Progress Mines.—Development has been actively pushed on in levels Nos. 3, 4, 5, 6, 7, 8, 9, and 10, resulting in the opening-up of large ore-bodies on Nos. 3, 4, 6, 7, and 9 levels in the eastern portion of the mine. The total distance driven, &c., during the year is as follows: Driving and crosscutting, 3,672 ft.; raising and sinking, 927 ft.: Total, 4,599 ft. Stoping has been carried out from No 3. level down to No. 9 in a general manner, and the yields obtained therefrom are fully up to expectations, so far as tonnage is concerned. In the eastern section of the mine large bodies of low-grade ore, which cannot be worked to a profit under existing conditions, are used as filling-in material. To ascertain the dimensions of the reef on Nos. 6 and 7 levels, east, the continuation of the north-east ore-body has been located, and the stone on both levels extracted. A valuable ore-body recently discovered on No. 9 level, east, has partly enabled the management to locate the same line of reef on No. 10 level. This discovery, if permanent, will greatly enhance values on the deep levels, as considerable work has been undertaken to locate the existence of the main lodes at this depth. Diamond-drill borings, actuated by compressed air, have been actively pushed on in No. 10 level for the last three months, resulting in two blocks of

stone being recently struck quite unexpectedly. The surface equipment has been further increased by converting the single cylinder 14 in. by 22 in. Rand air-compressor into a duplex movement. This alteration has greatly aided development, as no difficulty is now experienced in keeping the air-pressure at 80 lb. while six drilling-machines are running in full work. At the old shaft the winding-engine has been replaced on a concrete bed in a reversed position, so that the driver is now in full view of the ropes while the cages are running in the shaft. At the battery the only additions of importance have been the construction of two new tanks—10 ft. in diameter, 7 ft. in depth—in connection with the cyanide installation, thus making the number of treatment-tanks in use up to twelve. One other tank is also in course of construction. An additional sump 20 ft. by 8 ft. has been erected. This is used for storing strong solutions. The cyanide house has been enlarged to cover the tanks erected, and a small shed placed over the new sump. The whole of the company's plant has been maintained in good order, and the output of the mine exceeds that of any previous year. This year's work resulted in the mining, transportation, and reduction of 57,114 tons of quartz, which yielded by amalgamation 21,298 oz. 15 dwt. 22 gr. of gold, valued at £88,738 12s. 11d. 1,060 tons of concentrates treated by chlorination yielded 2,866 oz. 1 dwt. 13 gr. of gold valued at £11,851 15s. 4d., while 26,547 tons of coarse battery sands treated by cyanide yielded 3,181 oz. 6 dwt. 19 gr. of very base bullion valued at £7,769 11s. 1d. The working-costs amount to 2s. 4·704d., and the profit to 3s. 5·537d. per ton treated, making the yield equal to 5s. 10·241d. A small experimental shipment of 13 tons of roasted slimes forwarded to the smelter realised £142 14s. 8d. A general summary of the aggregate working-cost, yield, and resulting profit in milling 57,114 tons, and cyaniding 26,647 tons during the year is as follows: Total working-cost (exclusive of capital and development expenditure) incurred in mining, milling and chlorinating (including bullion charges and office expenses) £45,971 2s. 9d., or 16s. 1·176d. per ton milled; cyaniding, £3,175 1s. 4d., or 1s. 1·342d. per ton milled; totals, £49,146 4s. 1d., or 17s. 2·518d. per ton milled: Profit on mining, transportation, milling, concentrating and chlorination works (including office expenses and bullion charges), £54,619 5s. 6d., or 19s. 1·517d. per ton milled; cyaniding, £4,594 9s. 9d., or 1s. 7·307d. per ton milled: totals, £59,213 15s. 3d., or £1 0s. 8·824d. per ton milled. Summary: Total working-cost, £49,146 4s. 1d., or 17s. 2·518d. per ton milled; profit, £59,213 15s. 3d., or £1 0s. 8·824d. per ton milled: yield, £108,359 19s. 4d., or £1 17s. 11·342d. per ton milled. On capital expenditure, £8,115 2s. has been spent during the year; of this amount £6,508 16s. 7d. was incurred directly in mine-development. The milling-time during the year 1903 was very good, but a serious break in the water-race caused a stoppage of four days eight hours during July. This was the only break of any importance. The total number of days the mill ran was equal to the theoretical time with the exception of 12·62 days. This loss of time represents the total delays caused by the monthly clean-ups, daily scrapes, water-race breakages, and incidental stoppages. A successful and prosperous year for 1904 is confidently looked forward to. The same policy will be pursued as heretofore, with the exception that mine-development will be pushed even more energetically than during the period under review.

Keep-it-Dark (owners, Keep-it-Dark Gold-mining Company (Limited); Edwin Bray, manager).—The operative works in connection with the mining, milling, and cyanide extraction have been continuous, while the progressive developments comprised sinking of the main shaft, extension of No. 5 crosscut to intersect the main lode, and completion of the necessary connections for passing and ventilation between Nos. 4 and 5 levels. The auriferous blocks on Nos. 2 and 3 levels having become totally exhausted, stone for milling purposes was chiefly stoped from No. 4; the reef on this level having maintained a uniform width and quality, except where partially intercepted and displaced by mullock-intrusions. While crosscutting to intersect the main lode in No. 5 level, the cap of a supposed new block was struck at 252 ft. from the main shaft, and was driven on for 30 ft., but its geography and values await development from No. 6 level on completion of sinking operations. The working-plant of this property is kept in good repair, while timbering and ventilation are made special features throughout. The working-cost for mining and raising 12,568 tons of quartz for milling purposes was £7,567 or an average of 12s. 5d. per ton, while the cost of crushing and other incidental expenses amounted to £1,464 14s. 1d., or a fraction under 2s. 4d. per ton. The gross yield, 3,639 oz. 1 dwt. 6 gr. gave an average of 5 dwt. 19 gr. The results from the cyanide extraction have been favourable; partly due to a reduced percentage of antimony in the ore. The output of bullion from this process, 1,643 oz. 5 dwt. 18 gr., valued at £5,697 9s. 5d. gave a value return of 9s. 0¾d. per gross ton milled, while the cost of treatment, including labour and all material used, amounted to £2,316 3s. 5d., or 3s. 8¼d. per ton, leaving a profit of 5s. 4½d. per ton on the total tonnage.

New Inkerman Mine (Norman Dudgeon, attorney).—Mining has been practically confined to stoping east and west from the new incline hoisting-shaft with the exception of completing the varied details in connection with the shaft. Regarding width and regularity of formation, the reef so far as developed maintains a wandering position occasioned by regular jumps-up which necessitate the stopes being generally driven in the solid. The works are in good order, while timbering and ventilation are strictly attended to. The fifteen-head stamp mill, recently constructed and fitted with automatic feeders and other modern appliances, commenced crushing about May, giving a regular monthly return. Cyanide extraction-works, in proportion to milling-requirements, have also been suitably installed.

Industry Mine.—Operations on the No. 1 drive opened east of the Big River Road, Merrijigs, having proved unsuccessful, all work has been suspended, and the movable plant withdrawn. However the company have opened an old tunnel on the Cumberland property, and continue to push development-work which, so far as prospects have yet determined, does not offer much encouragement for future prospects, as the country rock is badly crushed and undefined. There are two miners employed. The ground is securely timbered.

New Scotia.—This company, after a lengthened period of driving, sinking, and rising to connect the Scotia Eastward with the Gallant low level, have meanwhile abandoned all operations connected therewith. The hoisting-engine and boiler have been removed and rebuilt to sink on an outcrop from the Gallant rise level.

Victoria and Inglewood.—The upper levels of this old property having been thoroughly overhauled and retimbered where required to insure free ventilation, operations were resumed on the battery level

to extend it further on the line of reef to undercut a winze from No. 4. Connection has been successfully completed, and stoping has now commenced, but up to time of writing, battery-returns have not come to hand. The working is securely timbered and well ventilated.

Big River.—As stated in my report of last year this company had completed a further sinking of 100 ft. in the main shaft, making a total depth of 1,090 ft. After considerable driving, crosscutting and rising, they were fortunate in striking a block of high average stone, from which a crushing of 340 tons near the close of the year yielded 453 oz. The prospects of this stone continue favourable, and it is hoped that the company will reap a rich harvest for the pluck and energy displayed in carrying out such an extended period of development.

Last Chance.—Morris and Fleming, in continuing to mine the small leaders on this claim, are stimulated by the periodical returns from the battery, which seem to have a natural tendency to improve as they go along. Great care is taken to secure the ground.

Golden Lead.—This company continue with unabated energy to follow the leaders on this property, even though the prospects so far obtained have been very discouraging. Two men are employed.

Jones Creek, Ross.—Messrs. Aitken and Sutherland are carrying out a system of trenching and crosscutting on a small leader, located near the upper reaches of the Jones Creek. In the low level they have followed a well-defined leader 3 in. thick, carrying fair gold, for 16 ft. The lead is increased in a very promising slate country, and, providing it proves to increase in dimensions and value, a new phase of mining may probably await the Ross district.

Mount Paparoa (Mr. Alexander Campbell, mine-manager; Mr. George Cray, secretary, Greymouth).—Operations at the inspection in May consisted in stoping out the block of stone north and south of winze sunk from No. 2 level. All ground is securely timbered and well ventilated; the winze mentioned acting as the upcast. Twenty-one men were employed. The mine was closed down towards the end of the year.

Garden Gully (Mr. Hooper, mine-manager; Mr. Parkinson, secretary, Greymouth).—Six men have been employed driving along the lode (north) on a body of quartz having an average width of from 9 ft. to 12 ft. The present contract is for 100 ft. Gold can be seen in the stone at times. All works are securely timbered and are ventilated by a fan; the motive-power being water. The crosscut to the reef is 563 ft.

General Remarks.

It is pleasing that in point of productiveness and values, the mining industry has fully maintained its standard, notwithstanding that the Merrijigs, Big River, and Paparoa districts have been practicably non-productive. While we cannot omit to remark that the return, £5,250, from the new Inkerman Mines is indicative of future prosperity, it is further notable that the standard now attained by persistent and systematic development of the ore-bodies at depth, not only insures profitable investment and permanent employment, but is conducive also to establish settlement and to be a stimulating factor in the providing of more comfortable homes. The prospector also is encouraged to make further research in the development of fresh fields. This latter remark is worthy of attention, as scope is amply provided for the profitable discovery of increased wealth.

Respecting the recent discovery of the Ulster lode in the Waitahu district, we have to congratulate the prospectors and investors on this important find, and it is hoped the enterprise will fully maintain the anticipations projected.

There were no fatal accidents during the year.

HYDRAULIC AND ALLUVIAL MINING.

Mahakipawa.

King Solomon Syndicate.—After considerable expenditure in water-race construction and pumping-installation to unwater and clear out the old King Solomon shaft-working, the company had to abandon further operations, and sink an intermediate shaft, which is used for winding and travelling; the water being raised by an 8 in. pump at the Golden Gate, and by a 9 in. pump at King Solomon shaft. Surface preparatory work is very slow, and underground operations are not likely to commence for some time.

In the Mahakipawa Valley, mining is confined to thirteen resident miners, who make varied earnings, as their prosperity largely depends on the rainfall. Cody and Jackson recently picked up two nice nuggets, valued at about £10, which are considered to be the forerunners of increased prosperity in the valley. Quite a rush has set in for quartz-areas, and a number have been pegged off.

Wakamarina and Deep Creek.—The river and creek being exceptionally low, owing to the very dry season, advantage was taken by the miners to turn the streams at several points, and they have been successful in clearing up the bottom with very encouraging results. Charles Dimante is making further effort to reconstruct the company for a last chance, failing this, mining in the Wakamarina will be a matter of history.

Ericon Hydraulic Sluicing Company.—This property may be regarded as practically a thing of the past as far as mining is concerned. The original owners (who have cleared small holdings) make a comfortable living between fossicking and farming.

Top Valley.—Since work has been suspended at the quartz-mines, the miners have taken advantage to rake the beds of the low streams, and, on two occasions, with splendid results.

Takaka.

Takaka Hydraulic Sluicing Company (Charles Campbell, manager).—With the systematic developments judicially carried out under the practical supervision of Mr. Campbell, the consistent returns obtained from this property have proved the venture to be monetarily successful. To facilitate future operations in the construction of fluming and maintenance of water-races, the erection of a sawmill is nearing completion. Pipe-line installations and other works are kept in good order. There are twelve men employed on the property.

Upper Anatoki.—Owing to the flooded state of the river, inspection of this property was quite impracticable when the district was visited. Inspection of Bartlett's Creek and Onamalutu districts was prevented by the same cause.

COLLINGWOOD.

Parapara Hydraulic Sluicing Company (James Bassett, mining-manager).—On the Glenmutchkin section of the property, sluicing operations continue to be actively pushed day and night under a constant water-supply of twenty heads, but unfortunately when the gold-bearing deposits are washed out from underneath the steep elevated terraces, huge slides of fragmentary rocks not only impede profitable operations, but the removal of these accumulations necessitates considerable expenditure.

The Glengyle claim is worked only with the spare water during wet seasons, and large slides of earth are also of frequent occurrence.

Quartz Ranges (owner, C. Y. Fell, Nelson).—Sluicing operations are confined to the Debtor's section, and worked by a tribute party of six men. Water-races and other plant are kept in good order, while the remunerative returns obtained are satisfactory to both parties concerned.

Rocky River.—All mining operations on this mine continue at a standstill.

Slate River Sluicing Company.—The water-supply for the development of this property being limited to the rainfall conserved at considerable altitude, operations were consequently hampered and unsatisfactory even though the auriferous values, if continually worked, are highly remunerative. The company having determined to effect further increased storage-capacity, have meanwhile ceased sluicing operations; and at the close of the year thirty men were employed in raising and strengthening the main dam, which when completed, will largely increase the conserved area.

Filleul's Freehold, Puponga.—Forbes and party of four men, having obtained the right from Mr. Filleul to work a section of his property, have constructed one mile of water-race with storage-dam attached. It is proposed to extend the race a further 38 chains to pick up a much larger stream. The wash so far opened out is 10 ft. in thickness, and the results obtained from ground-sluicing a small paddock were considered satisfactory.

Mr. Duncan Corby is sinking a series of shafts to prove the auriferous values in Te Hapu Flat: while samples of a white clay are also being taken from a cretaceous bed situated in the same locality. Should this clay be suited for commercial purposes, a syndicate is prepared to develop the property.

Karamea district was not visited.

WESTPORT.

Mining on the German creek and its tributaries shows a gradual decline; operations being chiefly confined to a few old resident miners who have acquired small holdings, and reap the fruit of the old-age pension.

Fairdown.—There has been no further effort made to reopen this property. Girder and party have been engaged for some time driving a prospecting-tunnel.

Waimangaroa River.—Mining on this river is confined to a few resident parties with variable results.

Golden Basin Prospecting Association.—Since my report of last year, nothing further has been done to extend the drive.

Bradshaw's Terrace.—Mr. Gillow, having failed to extract gold in payable values from the auriferous sands, after persistently carrying out a prolonged series of mechanical and other tests, has withdrawn his interest in favour of a private party.

Halligan and Party.—Since sluicing and elevating operations were commenced on this property, further development has been unimportant, other than the ordinary working which is kept steadily pushed and in good order. Drainage and table-construction were permanently effected in the first instance.

Shamrock Claim.—This once sluicing and elevating property, lately owned by Phil. McInroe, has been at a standstill and lying under water during the past two years. No efforts are being made to resume operations.

Golden Sand.—It would appear that this syndicate has abandoned the property.

Addison's Flat.—This sluicing and elevating claim, owned and worked by Carmody and party, is kept in thorough condition, and is actively pushed with lucrative results. Drainage and other operative developments connected with the claim, having been permanently constructed prior to opening the ground, alterations outside the ordinary routine of operations are not important.

CHARLESTON.

Charleston Beach Sluicing Company.—This company recently purchased the water-rights of the Croninville watershed to work and develop a beach-area north of Powell's property. When inspection was made, the various races and pipe-line connections were completed, while the tables and other accessories were under construction. The various works were in an advanced state of completion, and sluicing was expected to commence early in April. There were nine men employed.

Powell's Sluicing and Elevating Claim.—This established sluicing and elevating beach property continues to be persistently and systematically pushed. The main pipe-line having recently been increased and relaid, it is anticipated that the results from the increased volume of sands treated are likely to supersede any past records.

Argyle Water-race.—Urgent repairs to this race having been somewhat neglected, alluvial mining in the Charleston district has to a very large extent been hampered. When recently visited, four parties, comprising nine men were using the water when available, but owing to the very limited supply, other parties, who would otherwise avail themselves of the water, did not consider it prudent to open fresh claims. Crushing the auriferous sands is confined to five parties employing twenty-two men. The mills vary from five to ten head of stamps, and work with varied results.

MURCHISON.

Maruia Sluicing Claim.—The water-races and pipe-line connections are well maintained, but owing to dearth of water, which is chiefly supplied by rainfall, operations have been much hampered. There are six men employed.

Messrs. Thomson and Mitchell (four men) were engaged cutting a water-race for the purpose of sluicing the terrace which rises on the opposite side of the Maruia Valley. When visited (25th September, 1903), the party expected to commence sluicing about the end of the current year.

Six-mile Hydraulic Sluicing Company.—The varied works, comprising water-races and pipe-line connections, having been completed in a substantial and workmanlike manner, sluicing operations during the preceding nine months have been satisfactory, considering the limited water-supply occasioned by the excessively dry season.

Lyell Hydraulic Sluicing Company (Thornhill Cooper, manager).—When this property was visited (27th July, 1903), operations were suspended owing to a large break on the water-race; the manager and staff of six men being engaged in putting the race in repair.

New Creek Syndicate.—Adam Mahr and party are carrying out a series of surface prospectings to define a recently discovered lode. The lode has been intersected by a low level, and a few tons of stone await the completion of a road for transit to the battery.

Boatman's.

Mining in the Boatman's district is now principally represented by the dredging industry. Alluvial mining is confined to a few old-age pensioners who had established small holdings along the creek-banks in the former palmy days.

Grey Valley.

Blackwater.—The increased activity recently developed by the introduction of the Blackwater and Greymouth Lagoon dredges, has again given to this old mining settlement quite a tone of prosperity. The Chinese section of the community having recently carried out extensive works to drain the deeper ground, some rich yields are expected. The Miners' Association was granted Government subsidies on Craighead's and O'Flaherty's prospecting-tunnel. Leading from the main Grey Road, the Blackwater Track has been widened and graded suitable for heavy wheel traffic.

Ahaura.—So far as alluvial mining is concerned on the Ahaura River, Orwell Creek, and Callaghan's Creek, the European has practically transferred his lot to the Chinese, and from what little information can be gathered, the returns are varied.

Red Jack's and Kangaroo Creeks continue to afford employment to ten Europeans and thirty Chinese. No new developments have arisen.

Republic Hydraulic Company.—Sluicing is regulated to suit the other parties who use the water from the subsidised water-race. The water-race and pipe-line connections are well maintained. Seven men are employed.

Moonlight.—There are five parties employing sixteen men in all, whose earnings attain a high standard.

Grey Valley Sluicing Company.—As the result of a large fall of massive rock, caused by the removal of pillars in the Blackball Colliery, the water-race in connection with this property received extensive damage near its upper reaches; consequently sluicing was suspended pending the necessary permanent repairs.

The Montgomery's Terrace Hydraulic Sluicing Works have been seriously delayed, owing largely to a huge slide from the broken hillside which carried away a considerable section of the newly constructed water-race.

Roaring Meg Gold-mining Company.—Meagher and Jamieson have reopened this claim on tribute. The work so far done is chiefly the effecting of repairs.

Sorenson and party (three men), and Giacomo Rissa and party (three men) are hydraulic sluicing the same terrace adjoining Jamieson and party.

Faulkner and party are ground-sluicing the creek adjacent to Minerva battery during low water; also during the excessive dry season there were quite a number of fossickers taking advantage of the opportunity to clear out the gorge section of the creek below the battery.

Minerva.—All work continues to be suspended on this claim, and when visited there were two heaps of loose rails lying by the side of the tramway ready to be loaded and taken to the Roaring Meg; both properties belonging practically to the same owner.

Garden Gully.—When visited two men were engaged laying out a road from the Roaring Meg water-race to the mine. This was the only work in progress.

No Town Creek and tributaries furnish employment to sixty Europeans, and thirty-two Chinese. There has been no fresh development in alluvial work, dredging being the chief branch of activity.

Kumara.

The sludge-channels and deep levels connected with the various properties were duly inspected, and found to be maintained in an efficient condition and good order. In the No. 3 channel, certain repairs were satisfactorily effected during the year.

Kelly's-terrace Drainage Tunnel.—As the result of a recent inspection, stoppage of considerable extent was discovered, caused by a fall in the incline shaft. To remove the obstruction and effect the necessary repairs, authority has been issued to the Westland County Council for the expenditure of £100.

Wheel of Fortune Hydraulic and Elevating Mining Company.—The water-races and other mechanical appliances are giving general satisfaction, but operations were much hampered through dearth of water. When visited in April last, sufficient water was available to work one elevator only.

A notice signed by James Park and D. E. Thornton, attorney, and published in the *Hokitika Guardian*, dated the 12th July, 1903, stated that they had seized all property belonging to the Wheel of Fortune Hydraulic and Elevator Gold-mining Company (Limited) on behalf of the mortgagees, and that future mining carried out by D. E. Thornton would be on behalf of the Golden Links Gold-mining Company.

Back Creek.—Since Johnston and party's subsidised tunnel was completed the authorised distance, mining has been continuously and profitably carried out by eight men on a wash averaging

5 ft. The various works are securely timbered and well ventilated under the supervision of William Weblet.

Minerals (Limited) (R. R. Hunt, Secretary, Auckland).—The preliminary works of sinking a prospecting-shaft, extending the main drainage-tunnel, and the bush tramway, have been completed. The new works in hand include the erection of a paddock for saving the gold. The site of the main shaft will be determined after several small prospecting-shafts have been sunk, in order to decide the best place for the main shaft and the permanent works. The discovery of a new lead at the bottom of the prospecting-shaft just sunk gives the company two faces to work upon. The various works are securely timbered and well ventilated. There are fourteen men employed.

HOKITIKA.

Humphrey's Gully.—Since the extensive water scheme from the upper reaches of the Ahaura River and its tributaries has been completed, sluicing has been continuous night and day on Nos. 1 and 2 faces. Recently the property was let on tribute, and the efficiency of these important works, in their varied departments, is effectively maintained. Including those engaged in the maintainance of water-races, &c., there are twenty-two men permanently employed. Mr. Greenbank (manager) is the authorised representative of the company.

Craig's Freehold.—Mining on this property is continued by three responsible parties of tributers employing three, four, and five men respectively. The workings are securely timbered and well ventilated. There has been no fresh development of importance during the year.

ROSS.

Mont d'Or.—No change of any importance has been effected during the year. Sluicing has been much retarded, owing to the exceptionally dry season, consequently returns show a proportionate decrease. Water-races, dams, and other working plant, are in good order.

Ross United.—The Mont d'Or Company recently acquired the right of this property, but so far operations continue on tribute as under the old company.

OKARITO.

Fox and Cook's Rivers.—Lowe and party (six men) are constructing a water-race from the Fox River, a distance of two and a half miles, with the object of effecting hydraulic sluicing on a large scale. Guided by the extensive practical experience which the resident party has acquired relative to the auriferous character of the locality, they are satisfied to spend two years in the construction of a permanent water-supply.

Oamarua.—Woodham and McCloud, having just completed a successful series of prospecting, intend to commence sluicing directly their water-race and dam are completed. The various works are substantially built and in a forward state of completion.

Watson and Siller's water-race is nearing completion. They anticipate that sluicing will be in full swing in about two months. Meanwhile the timber for development is carried by manual labour a distance of six miles.

The Westland Hydraulic and Elevating Company (James Park, attorney, Hokitika).—The No. 2 elevator located just above the junction of the Callery and Glacier streams is worked on day wage, but when visited they had not washed up. On the No. 1 elevator, the tributers threaten to relinquish their tribute unless the next washing shows decided improvement. Water-races, pipe-line connections, and all mechanical installations are well maintained and in splendid working-order.

McVicar and Pannington with four others had completed arrangements to cross the Buster on the head waters of the Callery. On previous visits, during heavy frosts when streams are in low water, operations were very successful. Should the season be favourable, the trip will extend three or four months.

Waiho River.—Woodham, Batson, and Irwin parties, including fourteen men in all, are bringing up tail-races to operate on the bed of the river.

Gammon, Graham, and party, under an unregistered mining privilege, were working in the bed of the Waiho River to the detriment of the foundations and approaches of the bridge. At the instance of the Assistant Inspector of Mines, in the Warden's Court (25th November, 1903), a renewal of the application was opposed and struck out.

DREDGING.

A review for the past year of the gold-dredging industry as affecting the West Coast, does not disclose developments of importance conducive to stimulate or encourage the anxious investor to freely subscribe capital to an industry heretofore prejudicially affected by reckless speculation. It is true, nevertheless, where dredges of suitable construction are judiciously employed, profitable returns prove more consistent, and the term "sound investment" is more evenly qualified. By comparison of the revenue earned by a dredge termed "payable" in the ratio of the capital invested therein, practical experience has proved conclusively, that only in the minority of cases does the yield afford a profitable return.

With reference to the cost of working, breakage of machinery as an item of expenditure has always been underestimated, and the attention which should be directed towards economy and success has also been insufficiently considered. In short, these ruinous breakdowns and stoppages are simply looked upon as a natural and unavoidable sequence peculiarly suited to meet mechanical-engineering requirements.

Referring to the profitable extraction from the auriferous black-sand deposits, so abundantly distributed on the West Coast beaches, it is singular that notwithstanding the liberal inducement set forth by the Hon. the Minister of Mines to encourage scientific research, the problem, so far as demonstrated, has reached no higher altitude in the path of progress than the ordinary plush tables.

Working Dredges Inspected.

Name and Situation of Dredge.	Owners.	Dredgemasters.	Remarks.
Marlborough.			
Egmont	Alpine Gold-dredging Co. (Ltd.)	...	1/9/03: Effecting repairs. 22/1/04: Now dredging in Top Valley Creek.
Wangapeka	Wangapeka Gold-dredging Co. (Ltd.)	F. A. Palmer ...	16/2/04: Rules well complied with. Working one shift.
Golden Point	Golden Point Gold-dredging Co. (Ltd.)	W. Turnbull ...	3/9/03: Stranded during the late flood, and a contract for £600 let for refloating.
Collingwood.			
Aorere River	Aorere River Gold-dredging Co. (Ltd.)	...	15/9/03: Still stranded.
Parapara	Duncan Corby	D. Corby ...	15/9/03: Sunk. Now about to be raised.
Buller River and Tributaries.			
Old Diggings	Hansen and party	A. G. Skilton ...	16/10/03: Not inspected owing to heavy flood.
Rocklands Beach ...	Rocklands Beach Gold-dredging Co. (Ltd.) ...	D. McLean ...	16/10/03: Standing for repairs.
Premier Buller ...	Premier Buller Gold-dredging Co. (Ltd.) ...	W. H. Kitto ...	16/10/03: Not working on account of flood.
Welcome	Welcome Gold-dredging Co. (Ltd.)	J. T. Taylor ...	16/10/03: Regulations fully complied with.
Buller Junction ...	Buller Junction Gold-dredging Co. (Ltd.) ...	Smith Smeaton ...	15/12/03: Not visited on account of flood.
Mokoia	Mokoia Gold-dredging Co. (Ltd.)	W. L. Crookston...	15/12/03: Undergoing a general overhaul and a new screen.
Feddersen	Feddersen Gold-dredging Co. (Ltd.)	Peter McVicar ...	23/12/03: Stranded.
Fern Flat	Fern Flat Proprietary (Ltd.)	R. Liddicoat ...	24/9/03: Working on tribute. Rules well complied with.
Amikitia	Amikitia Gold-dredging Co. (Ltd.)	T. Warne ...	24/9/03: Rules well complied with.
Kohikohi	Kohikohi Gold-dredging Co. (Ltd.)	T. Warne ...	24/9/03: Undergoing extensive overhaul.
A1 Dredge	A1 Gold-dredging Co. (Ltd.)	A. Thompson ...	23/10/03: Elevator handrail, gangway over well-hole, and life-buoys required attention.
Reeves's Proprietary ...	Reeves's Proprietary Gold-dredging Co. (Ltd.) ...	Robert Scott ...	23/10/03: Life-lines, life-buoys, and boat-hooks required attention.
Boatman's Creek ...	Boatman's Creek Gold-dredging Co. (Ltd.) ...	W. G. Mouat ...	Recently commenced dredging.
Grey River and Tributaries.			
Blackwater	Blackwater River Gold-dredging Co. (Ltd.) ...	M. C. Cuff ...	11/12/03: Rules fully complied with. New copy of rules posted.
Mawhera	Mawhera Gold-dredging Co. (Ltd.)	George Lees ...	9/10/03: Undergoing thorough overhaul.
Lagoon	Greymouth Lagoon Gold-dredging Co. (Ltd.) ...	A. Crumpton ...	11/12/03: Rules fully complied with, except boat-hooks.
Watterson's Ahaura ...	Watterson's Ahaura Gold-dredging Co. (Ltd.) ...	W. McKenzie ...	11/10/03: Life-buoy, life-line, and boat-hook wanted.
Erickson's Reward ...	Erickson's Reward Gold-dredging Co. (Ltd.) ...	J. McAuley ...	11/10/03: Standing.
Daylight	Daylight Gold-dredging Co. (Ltd.)	...	Not visited.
Victory	Victory Gold-dredging Co. (Ltd.)	...	12/11/03: Standing, pending reconstruction of company.

WORKING DREDGES INSPECTED—*continued.*

Name and Situation of Dredge.	Owners.	Dredgemasters.	Remarks.
Grey River and Tributaries—continued.			
Trafalgar	Trafalgar Gold-dredging Co. (Ltd.)	...	23/11/03 : Sunk.
Nelson Creek	Nelson Creek Gold-dredging Co. (Ltd.)	A. R. Edmonds ...	12/11/03 : Rules well complied with.
Pactolus	Pactolus Gold-dredging Co. (Ltd.)	James Cowan ...	12/11/03 : Rules well complied with, except boat and life-line.
Aldinga	Aldinga Gold-dredging Co. (Ltd.)	N. K. Sligo ...	11/11/03 : Rules well complied with, except light lines and boat-hooks.
Garibaldi	Garibaldi Gold-dredging Co. (Ltd.)	...	27/7/03 : Undergoing extensive repairs. 11/10/03 : Standing.
Moonlight	Moonlight Gold-dredging Co. (Ltd.)	J. W. Russell ...	27/10/03 : Sunk in 5 ft. of water.
Callaghan's Creek ...	Callaghan's Creek Gold-dredging Co. (Ltd.) ...	David Clark ...	Not visited.
Red Jack's	New Red Jack's Gold-dredging Co. (Ltd.) ...	J. C. Nicholson ...	28/7/03 : Life-lines, boat-hooks, and bars across doorways required.
Bignell's No Town	Bignell's No Town Gold-dredging Co. (Ltd.) ...	W. Wylie ...	14/11/03 : Nearly completed.
North Beach	North Beach Gold-dredging Co. (Ltd.)	James Gilroy ...	Not visited.
Mosquito	Mosquito Gold-dredging Co. (Ltd.)	A. E. Morel ...	16/11/03 : Rules well complied with, except railing on hatchway.
Mosquito No. 2 ...	Mosquito No. 2 Gold-dredging Co. (Ltd.) ...	C. J. Swann ...	16/11/03 : Rules complied with, except bar across doorway.
Grey River	Grey River Gold-dredging Co. (Ltd.)	...	Now Mawhera.
No Town	No Town Creek Gold-dredging Co. (Ltd.) ...	A. Cowan ...	27/7/03 : Rules well complied with, except bar across doorways.
Westland Rivers and Tributaries.			
Maori King	Maori King Gold-dredging Co. (Ltd.)	...	7/11/03 : Standing.
Cornwall	Cornwall Gold-dredging Co. (Ltd.)	Walter Houching	22/5/03 : Undergoing general overhaul.
Leviathan Freehold ...	Leviathan Freehold Gold-dredging Co. (Ltd.) ...	...	7/11/03 : Standing.
Leviathan	Leviathan Gold-dredging Co. (Ltd.)	D. Sutherland ...	23/5/03 : Rules well complied with.
Stony and Mosquito ...	Stony and Mosquito Gold-dredging Co. (Ltd.) ...	G. G. McAlpine ...	23/5/03 : Life-line, boat-hook, and proper oars required.
Greenstone Junction ...	Greenstone Junction Gold-dredging Co. (Ltd.) ...	James Bennett ...	4/5/03 : Rules well complied with, except handrail on gangway.
Greenstone Three-mile ...	Three-mile Greenstone Gold-dredging Co. (Ltd.) ...	J. G. Donaldson ...	4/5/03 : Rules well complied with. Large boat undergoing repairs.
Greenstone Creek ...	Greenstone Creek Gold-dredging Co. (Ltd.) ...	Alex. Cowie ...	22/4/03 : Rules well carried out.
Stafford-Waimea ...	Stafford-Waimea Gold-dredging Co. (Ltd.) ...	George Wilson ...	7/11/03 : Rules posted on this date.
Woodstock	New Woodstock Gold-dredging Co. (Ltd.) ...	D. Sutherland ...	2/12/03 : Standing for urgent repairs.
New Commissioners' Flat	New Commissioners' Flat Gold-dredging Co. (Ltd.)	B. Naylor ...	29/10/03 : Boat containing a life-line and boat-hook required.
Prince of Wales ...	Prince of Wales Gold-dredging Co. (Ltd.) ...	James Sunderland	2/11/03 : Rules well complied with. Boat smashed while Inspector on board.
Kohinoor	Kohinoor Gold-dredging Co. (Ltd.)	David McMath ...	2/11/03 : Attention was directed to the dilapidated state of the elevator gangways.
Wanganui-Wataroa ...	Wanganui-Wataroa Gold-dredging Co. (Ltd.) ...	Andrew Dalziel ...	30/4/03 : Expect to start end of May.

OTHER MINERALS THAN GOLD.

NELSON.

The Minerals Belt Copper-mining Company (Limited) (A. B. Morgan, Secretary, Cashel Street, Christchurch).—This company, having recently acquired a leasehold of 800 acres, is actively pushing developments towards clearing and retimbering the old tunnels formerly driven in the Munster and United sections. Unfortunately plans or records of the old workings are not available, and increased expenditure is thus unnecessarily incurred to complete the varied and difficult works. However, with the efficient care exercised, the works so far completed are substantial and well ventilated.

In the Champion Mine, four men were employed for about three months clearing and retimbering, but owing to the expensive and difficult character of the ground, progress in that direction was abandoned, and a new crosscut commenced, which at the time of visiting, was driven 12 ft. and prepared for timber. Thirteen men are employed.

Meanwhile, the transit of food and mine-material is a grave consideration owing largely to the rough and unsatisfactory condition of the roads and track leading to the ground.

Washbourne Bros.' Works (Collingwood).—Since the yellow paints manufactured from the crude ore were introduced into the market, increased output has been steadily maintained.

ACCIDENTS AND FATALITIES.

QUARTZ-MINES.

Golden Ridge Mine.—(22–1–03): Hugh Evans sustained slight injuries returning to a shot.

Golden Fleece.—(6–1–03): Patrick Breen sustained slight injuries by falling down a pass.

Progress Mines.—(3–7–03): Henry Olsen and Charles Dawson sustained serious injuries by the explosion of a supposed miss-shot. Olsen lost left arm above the elbow, and Dawson sustained injuries to both eyes.

HYDRAULIC AND ALLUVIAL MINES.

Kumara.—(29–6–03): Chow Yun was killed by a fall of ground in the face.

Capleston.—(12–11–03): John Mamx was killed by a fall of earth in his sluicing claim.

DREDGES.

Premier.—(1–9–03): Thomas Freeman was drowned while running out lines. Body not recovered.

Greenstone Creek.—(21–4–03): Moses Barrowman was drowned while boating.

Daydawn.—(24–4–03): John Sim sustained fracture of left leg erecting machinery.

Grey River Extended.—(24–4–03): Edward Geoghan drowned.

Greenstone Creek.—Albert Labes lost left arm while oiling machinery in motion.

I have, &c.,

R. TENNENT,

The Under-Secretary, Mines Department, Wellington. Inspector of Mines.

Mr. E. R. GREEN, Inspector of Mines, Dunedin, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,— Office of Inspector of Mines (Southern District), Dunedin, 31st March, 1904.

I have the honour to forward the accompanying reports on quartz-mines, hydraulic sluicing, and alluvial mines, and gold-dredges, in the Otago and Southland Districts for the year ending the 31st December, 1903.

QUARTZ-MINING.

SHOTOVER.

Achilles Gold-mines, Bullendale.—After lying idle for eighteen months, during which period the English Company went into liquidation, the property was purchased by Messrs. Robert Lee and party, and work is to be recommenced at an early date.

Shotover Quartz-mining Company, Skipper's.—(7–12–1903): During the year a substantial ten-head battery, designed by and erected under the supervision of the company's engineer, Mr. D. B. Waters, has been installed in place of the old battery which had done duty for over thirty years. A fresh start was made to stope out quartz in the mine in October, although some prospecting-work had been done during the time the battery was being erected. Mr. C. Rillstone, the mine-manager, resigned late in the year and the vacancy was filled by the appointment of Mr. F. T. Ware, an English mine-manager with foreign experience, under whose directions stoping was continued and some good stone sent to the battery. The main adit is in good order and well timbered. The stopes are 30 ft. in length and filling is kept well up, very little timber being used or required in the stopes, the walls being hard and unbroken. The ventilating-fan, water-driven, works satisfactorily and supplies good air to the stopes. Shots are fired judiciously, so that the men do not work in an atmosphere vitiated by smoke and fumes. Ten men are employed in the mine. Two men were attending to the battery, while three men were engaged on surface-works. Explosives are kept in a suitable locked magazine outside the mine. Rules posted.

Aspinall's Reef, Packer's Point, Skipper's.—(8–12–1903): Mr. Ring took out 10 tons of this stone for battery treatment which yielded at the rate of 10 dwt. per ton. The big reef is 4 ft. 6 in. in width with a parallel leader 6 in. in width 30 ft. apart. The big reef is highly charged with arsenical pyrites. As clean stone the small leader would yield 1 oz. of gold per ton of quartz. Mr. Ring has latterly abandoned the property.

The reef outcropping on the eastern bank of the Shotover River opposite the Shotover Quartz-mining Company's mine has been taken up by Mr. Cleave of Invercargill. At the time of my visit one man was engaged exposing a block of stone on the hanging-wall, but no developments of any consequence had taken place.

The reef known as the Crystal reef was taken up by a party and some prospecting undertaken. The reef is wide, but very little work has been done upon it.

Reefton United Quartz-mining Company, Skipper's Point.—(8–12–1903): Since last visit the work of driving the crosscut to the reef had been completed and the reef was struck at 100 ft. The reef averages 2 ft. 6 in. at this point with a leader 9 in. wide running parallel to the main reef. Some driving was done along both these, and a leading stope taken out over 30 ft. on the reef. Some 10 tons of stone from reef and leader were packed out and taken to the Shotover Gold-mining Company's battery. I am informed that the stone yielded at the rate of over 1 oz. per ton of quartz. At the time of my visit, Mr. Ring, one of the Reefton shareholders in this property, was in charge and was awaiting advice from the company as to further development of the mine and erection of battery.

William Keating's Prospecting Claim, Upper Shotover.—Mr. Keating has done a considerable amount of prospecting by tunnelling for quartz-reefs at the Blue Slip, Upper Shotover. As a result of his operations he claims to have located several reefs in the locality.

Macetown.

Premier Sunrise (New Zealand) Gold-mining Company (Limited) (W. Patton, mine-manager, Macetown).—During the year 1903, the present company bought this property from the Indian Glenrock (Wynaad) Gold-mining Company. This mine has been worked continuously throughout the year, despite the unusual severity of the past winter. The reef continues mullocky and is by no means continuous through all the stopes, one of the drawbacks being that the backs are shallow—*i.e.*, up to 50 ft. or 60 ft. Blank patches met with in the line of reef interfere with consistent gold-returns. The incline-face is continuously pushed ahead in advance of working stopes and is now down a distance of 1,690 ft., measured along the dip, at an inclination of 1 in 4. Two shifts of eight hours each are worked, and twenty men are engaged in the dip-face and the stopes. The reef is narrow and the stopes are kept well stowed up, minimising the requirements of stoping-timber. The main dip is very heavily timbered and kept in fair condition. The air in the mine was dull on the date of my visit and must be more so after shot-firing. The water-blast erected last year has done good work, but the manager has decided to substitute pipes of a larger diameter for conveying the air down the dip. The return airway for a considerable distance is heavy and difficult to keep open. Even at the present depth of the mine it is surprising how little water is met with. The drainage-water is collected in sumps and drawn out of the dip in large tanks. The battery runs eight hours per day, two men and one boy being capable of looking after the fifteen heads of stamps in use. Tailings are collected, and after being sufficiently oxidised, are treated successfully by the cyanide process. Mr. Patton writes as follows: "I beg to submit the following report of work accomplished in the mine for the half-year ending the 31st December, 1903. Work in the mine was carried on almost continuously during the half-year. A stoppage of one week and three days in the incline-face was caused through an accident to the armature of our generator (electric plant) in the mill, during October, which also caused a stoppage of work for a week in the stopes. During the time these works were stopped, advantage was taken to have some necessary repairs carried out in the incline and ventilation-passage, so that part of the men were employed to advantage. The new electric-generator was started on the 27th October, and has been working fairly satisfactorily up to the present time. This new dynamo is situated about a mile and a quarter from the mine motor, which latter drives the hauling-gear at the top of the incline tunnel. A telephone was erected between the new generator and the motor, which has proved of immense service to us. The damaged armature is now being repaired so that we shall have a spare machine in case of another accident. Incline: During the half-year one shift of two men were employed for twenty-four weeks, during which time a distance of 72 ft. was driven at a cost per foot of £2 7s. 9d., including all expenses. No gold-bearing stone was met with. No. 35 rise: This rise was put up to a height of 14 ft., and at this height a crosscut was started to cut the line of reef and connect with the opening tunnel, which was being driven along at the bottom of the chute of stone. The total length of this crosscut is 51 ft. in the footwall, and it has been driven through very hard country. Opening tunnel from No. 34 pass: This tunnel was driven a distance of 54 ft. from No. 34 pass, at which point it was found that the reef had taken a dip, thus necessitating sinking on the reef to a depth of 10 ft., where we found that the reef had taken its usual underlie, and still continued towards the incline tunnel. A drive was then started for the purpose of following the reef, and also to connect with No. 35 crosscut. The reef continued 23 ft. from the opening tunnel towards the pass. Stoping: During the half-year stoping has been carried on between passes Nos. 30 and 40. The reef, as usual, varied very much in size and quality. It cut out in several places completely, and at times ran up to about 3½ ft. in width. Repairing: Two men have been employed during the greater part of the half-year repairing the incline tunnel and ventilation-passage, and a large amount of timber has been used. 1,800 ft. of 6 in. galvanised-iron air-pipes were procured for installing in the incline in place of 4 in.; which latter had proved too small for carrying sufficient air to ventilate the workings. These larger air-pipes are being erected as repairing-work proceeds in the incline tunnel. Milling: During the half-year 1,265 tons of quartz was crushed for a yield of 793 oz. 19 dwt. 19 gr. smelted gold, valued at £3,184 (approximately). The mill has had a steady half-year's work, with the exception of an accident which was caused by a heavy flood in October. Cyanide: The concentrates that have accumulated during the half-year are only now being treated. Financial result: The financial result of the half-year's operations has not been so good as usual; this is owing to several poor patches of ore having been met with, and also to heavy expenses which had to be incurred for timber and machinery: However, the mine has paid its way from start to finish and has remitted £100 to the London office.

In addition to this, we have spent £171 14s. 9d. on Mine Development Account, £143 4s. 3d. on New Plant Account, £4 0s. 3d. on New Buildings Account, and £12 15s. 6d. on Prospecting Account, all of which works are chargeable to capital. On Mining Account, that is, rising, crosscutting and stoping, the sum of £1,366 8s. has been spent to obtain 1,098 tons of ore, or an average of £1 4s. 9d. per ton mined. 1,265 tons of ore was milled at a cost of £251 19s. 8d. or an average of 3s. 11d. per ton milled. The treatment of 15 tons of concentrates was omitted from the previous half-year's report, which yielded 101 oz. 9 dwt. 15 gr., valued at £308 1s. 6d. It has cost £162 9s. for mine-maintenance—that is, keeping the main low-level adit, incline, and the return ventilation-tunnel in repair. The total expenditure on revenue accounts for the half-year, all charges, amounted to £2,580 4s. 9d., or an average of £2 3s. 4d. per ton mined and milled. Development-work: I have been strongly of opinion for some time past that there is a good prospect of striking payable stone between passes Nos. 14 and 20 in the incline. I may state that from passes Nos. 1 to 14 there were two reefs; one in the hanging-wall and one in the footwall. The hanging-wall reef was met with in the incline tunnel and was of fair quality, and on being worked up to a height of 20 ft. at No. 1 pass, indications led us to believe that a reef existed in the footwall; a crosscut was consequently started, and a distance of 15 ft. driven, when the footwall reef was discovered and found to be of good quality. This chute of stone continued and was worked down to No. 14 pass when it ran small but was still gold-bearing. Mr. Stanford (who was manager at the time) considered that it was too expensive to open up, and it was decided to discontinue operations on this line. The distance to rise from the incline to cut this line will be between 65 ft. and 70 ft. I am of opinion that if this reef was picked up again and followed, it would prove payable. I have often thought of going on with this work, and my only reason for not doing so long ago was the possibility of the reef not being so good as I believe it is, and perhaps not proving remunerative. There is, of course, a certain amount of risk, but, at the same time, I believe we ought to open up this line again. Our margin of profit has been so small lately, owing to the great amount of deadwork to be carried out in opening up our present workings, that I am almost afraid to start any new work. The above is work that I would recommend, and will be glad if the directors will sanction it. There is another venture that I am of opinion offers a fair chance of success, and that is, to drive back on the line of reef, from the incline, say from pass No. 20. This drive would be towards the east and would be under the present incline tunnel. This would, I think, be a good move as it would cut any chutes of stone that may have gone underfoot from the incline. This, I think, is all the more desirable, as it is an utter impossibility to approach this ground from any other point, as our present low-level adit has,been driven from the lowest possible point obtainable—namely, the creek-level—so that our present incline is the only means by which the Premier Mine can be worked. I do not know of any other work that I would recommend in connection with the mine, except that which can be carried out from the incline."

Tipperary Mine (owners, the Indian Glenrock (Wynaad) Company (Limited), Macetown).—Mr. William Patton, manager, writes: "I beg to report that having received instructions from the London oard of directors, I resumed work at the Tipperary Mine on the 4th December, last. Ventilation: This mine having been closed down for about five years, was found, on resuming work on the 4th December to be full of bad air, so that it was impossible to get through to ascertain what state the main adit was in. The first thing to do under the circumstances was to construct a water blast, so as to enable us to go on with repairing-work. This work was successfully carried out, so that we are now pushing ahead with the repairs, which prove to be more serious than I expected owing to the large chamber at the hauling-shaft being broken down, but it is impossible to say to what extent, as the tunnel is filled up, and access to the inner part of the tunnel is impossible in the meantime. Repairing Tram-line from Mine to Mill: This work is almost completed and a good job is being made of it. A good deal of damage was done to the line by heavy floods in the spring, which carried away some of the walls along the banks of the creek. These, however, are almost all rebuilt, and in about two weeks the road will be in working-order. Cleaning and Repairing Water-race: This work will be taken in hand immediately the tram-line is finished, and will take some time to complete as the race is filled up in places. There is also a long stretch of wooden boxes, which will require renewing (the length being about 100 ft.), and will cost £10 to £15. We shall, however, have this work carried out as cheaply as possible until the reef is tested."

Cromwell.

Cromwell Proprietary Gold-mining Company, Bendigo (C. S. Reeves, legal manager).—As stated in last year's report this property was let on tribute to the Bendigo Gold-mining Company (Limited), by whom it was sublet on tribute to M. B. Edwards and party. Operations, however, have not been in the direction of the development of the mine, but have been confined to prospecting for payable stone in the higher levels. To further test the permanency and value of the stone at depth, the proposed low-level tunnel from Bendigo Gully will require to be driven. This proposal received due consideration from the London board of directors, but the desired instructions are not forthcoming. Tenders were subsequently called for the purchase of the property of the Cromwell Proprietary Gold-mining Company (Limited) of Bendigo, consisting of mining-licenses, water-races, winding and crushing plant, and the whole concern was sold at a small figure to Mr. D. B. Waters, mining-engineer, who, it is understood, was acting on behalf of a small syndicate.

Bendigo Tailings Syndicate, Bendigo (S. E. Brent, secretary).—Cyaniding operations were carried on until the clean tailings in the storage-dam became exhausted. Attention was then turned to the accumulation of battery-tailings, which had been discharged into the creek and allowed to run to waste for many years, and are now lying spread out from the foot of Bendigo Gully. The deposit is covered by creek *débris*, and a much larger plant is required than the one in use in order to treat the tailings profitably. Some preliminary work was done, but operations had been suspended for the greater part of the year.

Alta Mine, Bendigo (H. Holmes, mine-manager).—A level was driven to strike the reef from the battery level, and about 100 tons of stone taken out and treated in the battery. The high results anticipated from this mine were not realised as the stone is low-grade and patchy. Latterly only one man has been engaged on prospecting-work in the mine. A five-head stamper-battery was erected at the mine and power supplied by a 7-horse power oil-engine. Later information from the mine is to the effect that a scheelite lode has been struck, running parallel to the reef-walls.

Bannockburn.

Go-bye Mine, Carrick Ranges (J. B. Holliday, owner).—Mr. Holliday has been prospecting on this property for the past six years. A large amount of driving has been done but without meeting with a body of payable stone. In spite of the want of success as yet attending his exertions, Mr. Holliday displays his confidence in the future of the Carrick Ranges as a quartz-mining field, by the persevering manner in which he carries on his prospecting operations.

Messrs. Lawrence Bros., Carrick Ranges.—No work has been done on Messrs. Lawrence Bros.' property this year.

During the year several syndicates turned their attention to the Carrick Ranges. Some desultory prospecting was indulged in from which no permanent results eventuated. There is a wide field for reefing on these ranges, but the stone is mainly refractory and requires special treatment.

Bald Hill Flat.

White's Reef, Bald Hill Flat (R. T. Symes).—The prospecting-drive has been extended 100 ft., during the year, making a total length of 750 ft. driven along the hanging-wall of the reef. At the face of the drive the footwall is coming in, the country is getting harder, and good stone may be expected shortly. The payable chute of stone found by White's company is overhead, there being 110 ft. of backs in which a rise is now being put up. The prospecting-drive stands well with occasional renewal of timber. Two men are generally employed in and about the mine. Quartz leaders carrying gold are met with. The quartz is treated in the five-head stamper-battery.

Excelsior Mine Bald Hill Flat (F. W. Gray).—This mine is in good order, timber excellent, and ventilation good. Mr. Gray, the mine-owner, supplies the following interesting information *re* this mine: "Work has been carried on as usual during the year at this mine, an average of four men being employed. The principal work done during that time has been the stoping of stone and prospecting-work underfoot or below the working-level which runs into the hill some 330ft. from the battery. Although the stone loses nothing in quality, in depth it is, owing to the wet nature of the ground, becoming more difficult to work, and the owners contemplate abandoning this mode of working and driving a still lower level to tap the stone at greater depths, or trying further along the line of reef for some fresh chutes. Since last Christmas up to the present time—October—some 215 oz. of gold, valued at £3 18s.per ounce have been obtained, which provided a fair margin for profit over working-expenses. The reef in this mine is of a heavy mullocky nature, the walls being stone 12 ft. apart. The gold-bearing run of quartz, however, rarely exceeds 3 ft. in width, and is bunchy. The ground requires to be close-timbered, and the working of the mine is somewhat difficult. This mine is a paying one, and the owners are confident that if solid country is met with at greater depths, better quartz will be obtained."

Rough Ridge.

Rough Ridge Quartz Reef, Rough Ridge (F. H. Perry).—Very little work has been done on this property during the past year.

Waipori.

During the year there has been absolutely nothing done in this district in the way of quartz-mining, and there is nothing at present to indicate that a revival will take place in the near future.

O.P.Q. (Waipori) Gold-mining Company (Limited) (A. E. Inder, manager).—After about eighteen months' crushing with a ten-stamp battery, which produced gold to the value of £15,000, it was recognised that cartage so increased the cost of fuel that radical alterations to the power plant were necessary to enable the mine to be worked to advantage. With considerable reserves of ore in sight, operations were suspended, and a proposal submitted to the board of directors to replace the steam plant with water-power, and the rights were acquired to enable this to be done. Another power available would be electricity, obtainable from the Waipori Falls Electric Power Supply Company. Little difficulty was anticipated in raising the capital necessary to carry out the proposed alterations and to develop the mine to a greater depth. The returns from the mine and the favourable opinion formed by the chairman of the board when he visited the property with an expert adviser were, it was thought, sufficient guarantee that the money would be forthcoming. The scheme submitted to shareholders provided for the raising of £15,000 by means of preference shares, which should be entitled to the whole profits of working until the money so raised was returned, after which preference shareholders were to rank as half-owners of the property. Unfortunately, the fortunes of the O.P.Q. Mine were so involved with those of other ventures in New Zealand, Victoria, and British Columbia, that capital was not so readily obtainable as it probably would have been had the mine stood alone. A large proportion of the shares were subscribed within a very short time. The balance, however, failed to go off, the antipathy of the English investor to things New Zealand dooming the scheme to failure. The main shaft on the property was sunk to a depth of 285 ft., inclusive of a sump 15 ft. deep. The lowest level driven is therefore less than 270 ft. below the shaft-collar. The mine had previously been worked from a shaft, the bottom of which corresponds to the present company's 180 ft. level. Thus the new ground opened up by the present shaft is less than 90 ft. in vertical depth. The continuity of the quartz chute has now been proved from the surface to the lowest level, where two veins of rich quartz continue strong underfoot. Although

this part of the mine contains the richest ore, other portions of the lode worked from adit levels have produced large quantities of quartz of lower grade, but still rich enough to show a good margin of profit with the cheaper motive power. Although the boilers and engine providing the power at the mill are altogether unsuitable for a place where the cost of coal is so high, they are still first-rate machines of their type. The winding and pumping machinery is good and sufficient for its purpose, while the crushing plant, a battery of ten stamps, is, for its size, probably second to none in the colony. The two vanners in use have proved a valuable addition to the gold-saving plant, and have shown the advisability of an addition to the number of these useful machines. The tailings from the mill have been regularly tested by assay, and do not show a value sufficient to warrant the erection of a cyanide plant. It is possible, however, that stone from the lower levels would, if treated separately, have shown a different result. The finances of the company did not permit of exhaustive experimenting, and further, the character of the ore from the upper and lower levels was so different, that it was found to be advantageous to treat both together. Thus the hard brittle quartz from the lower levels counteracted to some extent the clayey material unavoidably sent to the mill with the sugary quartz won from the upper levels. Although in the meantime there are difficulties in the way of finance, it is probable that these will be overcome, and the mine reopened. It is certainly to be regretted that a mine showing the returns the O.P.Q. has shown when worked under serious disabilities, should be closed down without an opportunity of proving its value by working under more favourable conditions.

Bella Reef, Lammerlaw Range.—Want of capital to open up and put on a plant to successfully treat the low-grade stone has hindered the further development of the mine. A sample of concentrates sent to Australia for treatment, and from which good results were anticipated, appears to have gone astray, consequently the mine has been idle throughout the year.

Cox's Reef, Lammerlaw Range.—This mine continues to be closed down.

Milton.

Last Chance Quartz-mine, Canada Reef (Thomas Park, owner).—Area of claim, 59 acres. Mr. Park employed four men taking out 35 tons of quartz, which was crushed for a return of 16 dwt. per ton.

Macrae's.

Quartz-mining in this district has progressed steadily during the year, while some attention has been directed towards opening up at new points along the line of reef. As stated in last year's report, new machinery has been installed in the district, and more attention is being turned to the proper treatment of battery-tailings and the saving of concentrates.

Bonanza Mine, Macrae's (T. Kinvig, mine-manager).—A good deal of the timber throughout the mine has been repaired. The passes and stopes are in good order. Air good all over. Three men are employed in and about the mine. A rise is being put up from 60 ft. level on stone 3 ft. in width.

H. N. Mills and Sons, Macrae's.—(12–3–1903): The battery is idle, and very little crushing has been done during the past twelve months. Most of this has been in prospecting parcels from different points on the field. (25–10–1903): The battery has been shifted from Macrae's Flat to Horse Flat, and re-erected there. Stone is being mined from a surface-blow close to the battery, but unfortunately the results are not yet satisfactory.

Alfred G. Davies, Dunback Hill, Stoneburn.—Davies quarries out a considerable amount of quartz from various points on his freehold property. The stone is crushed in a five-head battery, power being supplied from a Ransome portable steam-boiler and engine. The stone is low-grade, but the tailings have been found to be of some value, and are being saved for future use.

Gilmour and Party, Dunback Hill, Stoneburn.—Tenders are being called for driving a tunnel 100 ft., more or less, to crosscut on to the reef.

Golden Bar Gold-mining Company (D. Peddie, mine-manager).—(12–3–1903): This mine is in good working-order, and a splendid body of stone has been opened out in readiness for stoping. Five men are employed in the mine, and the battery is kept running full time. The stopes are well timbered, and stowed except near the outcrop. The explosives are now stored in a secure surface magazine, and are carefully handled. The five-head stamper-battery is giving satisfaction; from 60 to 70 tons of quartz being treated per week. (24–10–1903): This mine is well conducted and in good order. All the stone to the rise of the top working-level has been stoped out, and a lower level has been driven 220 ft. on to the reef. From this level it will be possible to rise 70 ft. through quartz before reaching the top level, which gives the company a grip of a splendid body of stone. The level is in good order, and a good supply of stoping-timber is kept on hand. Six men are usually employed in the mine and three in the battery. The quantity of explosives kept in the mine on this date was excessive, and I advised the manager to reduce the amount considerably. The tailings are now being saved, as the concentrates are found to be valuable. (28–11–1903): I visited the mine on this date in connection with the fatal accident whereby John Harcus was killed by an explosion of gelignite.

Ounce Reef (Spiers and Ross, owners).—(12–3–1903): W. H. Lidston and party work this mine on tribute, but have not been very successful so far, chiefly owing to the smallness of reef and the distance the ore has to be conveyed to the battery, increasing the cost of winning the gold. Four men found employment here for a few months, but at this date only two men were engaged surface-prospecting on the reef. (24–10–1903): No one at the mine; very little work done since my previous visit.

Donaldson's Golden Point Mine (J. Pascoe, mine-manager).—(12–3–1903): At this date four men were engaged in an open cut, laying bare a large reef-formation carrying layers of scheelite. The erection of the new ten-head stamper-battery is being proceeded with. (24–10–1903): Operations had been pursued to the dip of the main drive, and the reef continues the same in value and permanency. This work has been discontinued, and operations are now confined to open-cut work. There is a fair percentage

of scheelite running through the reef-formation, much of which is clean enough to be handpicked and bagged. A good supply of timber is kept about the mine for use as required. Tenders are being called for driving a low-level crosscut to cut the reef at depth. The new battery has been fitted up, and runs satisfactorily, whilst the Woodbury shaking-table continues to give satisfactory results. On an average eight miners and three battery hands are employed.

Maritana Reef (M. C. McGill).—(12–3–1903): The battery has been erected and trial crushings made, but owing to scarcity of water, continuous operations were impossible. (24–10–1903): Further trial crushings with the experimental plant have been made. These prove the presence of free gold in payable quantity, whilst samples of crushed pyrites treated at the Colonial Laboratory were proved to contain gold to the extent of 4 oz. 5 dwt. per ton. Mr. McGill is satisfied that for successful working, the property requires an up-to-date plant driven by steam. A small concentrating-buddle was erected, and the concentrates were proved to be worth £17 per ton in gold and silver.

Mount Highlay Quartz-mine.—After a period of inactivity this mine has been placed under option to McGill and Stevenson, and it is understood that the mine will receive a further trial in the near future.

Nenthorn.

Samuel Stephens' Quartz Claim.—An application for a license over a special quartz claim, comprising 20 acres, in Nenthorn District, was granted to Samuel Stephens in August, 1903.

Alexander Ewart's Quartz Claim.—A license over a special quartz claim consisting of 30 acres in the Nenthern Mining District, was granted to Alexander Ewart in August, 1903.

Barewood.

Barewood Gold-mining Company, Barewood (W. E. Hitchcock, manager).—Operations had hitherto been carried on to the rise of the 130 ft. level, but workings are now confined to the 188 ft. level, in which nine men are engaged timbering and taking out leading stopes. The gold-bearing chute is on the hanging-wall, and runs from 10 in. in width up to 4 ft. or 5 ft. There is no work doing to the rise of this. All the stoped ground to the rise is filled in, and none is standing open except the levels and passes. Ventilation good. A rise has been put up to the intermediate level. Plans have been prepared for a new battery, and the housing and framing are being erected on the site. A new winding plant has been procured and erected on the mine. The shaft has been put in thorough working-order, and a safety-cage "Robert's Special" Bendigo, Victoria, has been installed fitted with safety-catches and Middleton detaching-hooks. The poppet-heads have been overhauled and put in a good state of repair. The company has acquired a new lease on the line of reef, and a considerable amount of surface-prospecting has been done. The mine is in good order. Ventilation fair. Two men are employed in the stopes, the greater number of the men being engaged on surface-works. Eighteen men are employed in and about the mine.

Stewart Island.

Baden-Powell Quartz-mine (Widdowson and party, A. Pascoe, secretary, Invercargill).—This party hold a special reefing-claim of 99 acres. Three men are employed, but up to the present operations have only been in the stages of development.

Preservation Inlet and South-west Coast of Otago.

At the New Star (formerly Morning Star) Mine, Preservation Inlet, after full six months' deadwork, the tributers recently found a small shoot of stone carrying gold, which is expected to lead to something better. Six quartz-miners are working in this mine, four alluvial miners at Coal Island, three alluvial miners at Sealers No. 2, two alluvial miners at Southport, and a caretaker at the Golden Site Quartz-mine.

Prospecting on the south-west coast is rendered difficult by the steep and mountainous nature of the country, which is covered with dense bush. The s.s. "Rimu" and the s.s. "Invercargill" run regularly to Preservation Inlet, being subsidised by the Mines and Postal Departments, and the Government steamer "Hinemoa" makes about three trips during the year, landing stores, &c., at each inhabited place; but, except in the various sounds, boat-landings are few, and these become dangerous during the prevailing westerly weather. At least one member of any party of prospectors would need to have had some previous experience of boating on the south-west coast. The overland tracks from East to West Coast are: Lake Te Anau to Milford Sound; Glenorchy to Martin's Bay; and Lake Wanaka, through Haast Pass to Okuru; but the latter track is not in good order.

New Star Mine (tributers, Hawkins, Juncker, and party).—The old tribute having expired, a new tribute was let in January last, work being conducted in No. 1 level, which had been driven on 300 ft., and stoped on a blank face, no stone showing. At a distance of 380 ft. boulders of quartz were met with, gradually making into a chute of stone 10 in. to 12 in. in width. At 410 ft. a rise was put up 20 ft., stone continuing, and indications hopeful; walls, 5 ft. to 6 ft. apart. The lode consists of white quartz, carrying pyrites and a little galena, and the quartz gives a return of about 6 dwt. of gold per ton, each successive crushing being an improvement on the previous one.

HYDRAULIC SLUICING AND ALLUVIAL MINING.

Maerewhenua District.

Owing no doubt to the favourable season for water, but more particularly to the supply available from the Mountain Hut Water-race, mining on the Maerewhenua Diggings is now being more vigorously prosecuted than for many years past. The claims on this field resemble each other, in that ground-sluicing is the universal method of work adopted, and stripping from 10 ft. to 40 ft. in thickness, composed

of clay and gravel bands, is seen resting on a greensand bed of marine origin. The greensand bed which may be taken as being about 6 ft. in thickness, carries a few colours of gold throughout, and where the "black seam" comes in—as it does on several of the claims—the "prospects" are fairly good, but the best wash is found underlying the marine bed, and varies in the several claims from 1 ft. to 3 ft. in thickness. The pay-wash is resting on a soft false bottom (or "Maori bottom" as it is sometimes called) into which the tail-races are cut into deep channels owing to attrition of tailings and water from the claims. Generally speaking, the material treated is of a free nature and easily dealt with, which is fortunate under ruling conditions of lack of plentiful water-supply under pressure. It is found that the claims on the lower levels are becoming somewhat hampered for want of fall for tailings, but the majority of the claims now being worked are on the higher ground, where consequently increased fall is gained at the expense of loss of water-pressure. About thirty-seven men are at present employed on the field; six claims employing thirteen men obtaining water-supplies from private races, while some twelve claims employing twenty-four men are dependent upon the Mountain Hut Race.

George Adams.—About five heads of water being brought in by private race from Sheepwash Creek. Five men employed.

Becket and Bayley.—Three heads of water-race eight miles in length from Bushey Creek. Three men employed.

Joseph Frater.—No. 1 claim: Water from private race brought in from Ben Lomond. Three men employed. No. 2 claim: At Thistle Hill, new claim being opened out.

Meikle and McAlinden.—Two claims in the "lower" greensand. Water obtained from the Pioneer Race, a private supply.

Claims Supplied from Mountain Hut Water-race.

Barnes and Russell.—Opening out new claim on Thistle Hill. Two heads of water used. Two men employed.

Thomas Cooper.—Opening out new claim. One man.

Thomas Duffy.—New claim. Two men employed

Bloomfield and Adams.—Two men employed.

White and Donegan.—Claim recently opened up. Water conveyed from race to claim by 600 ft. of piping reduced from 18 in. diameter at intake to 9 in. diameter in paddock.

James Brayshaw.—New claim, face 50 ft. in height. Pipe-line, 1,200 ft. in length; intake 24 in. diameter reduced to 11 in. diameter. Two men.

Charles Adams.—Claim recently opened out. Pipe-line 1,000 ft. reduced from 18 in. diameter to 9 in. diameter. Three men.

J. Rogers.—One of the new claims. 800 ft. piping 18 in. diameter reduced to 9 in. diameter. Two men.

G. Campbell.—New claim. Pipe-line, 600 ft. Two men.

George Adams, Jun.—New claim. Pipe-line, 400 ft. Two men.

Buckley and O'Donnell.—New claim. Two men.

J. O'Donnell.—New claim. Two men.

Manuka Creek.

Stewart's Sluicing Claim, Manuka Creek.—Mr. Stewart having died during the year there is very little doing now on this property.

Waitahuna.

German Flat Hydraulic Sluicing and Elevating Company (A. Sutherland and party).—Three men find employment on this claim from which the gold-returns are not large. It is proposed to extend the water-race to a claim in Waitahuna Gully, from which better results are expected. German Flat has proved a poor mining property for the expenditure of capital.

Upper German Flat Hydraulic Sluicing Claim (S. Johnston and N. Girvan).—Area, 14 acres. Claim worked by the two shareholders who also employ a third man. The claim affords the shareholders fair wages.

Waitahuna Gully.

City of Dublin Sluicing Claim (J. Ferris and party).—Ground-sluicing operations are still being carried on in the cement face.

Quilter and Sons' Hydraulic Elevating Claim.—This claim has a very poor water-supply, and only affords employment for two men in the daytime.

Thompson and party (Norwegian Company) (C. Thompson, manager).—The plant is still operating on the flat in Waitahuna Gully.

Sailor's Gully (Waitahuna) Gold-mining Company (Limited) (A. Barr, manager).—Area, 64 acres. This claim is worked by hydraulic sluicing and elevating. Favourable results are obtained from this property on which operations are now being conducted in the cement-deposit. Four men are employed.

Waitahuna Gold-dredging Company.—Two unsuccessful attempts have been made to work this property by means of dredging. The dredge is now sold for removal. As the ground is payably auriferous, it is proposed to extend the German Flat Company's water-race on to this claim and work it by means of hydraulic sluicing and elevating. Area of claim, 61 acres.

Wetherstones.

Golden Crescent Hydraulic Elevating Company (W. Smythe, manager).—Area, 90 acres. Terrace and flat ground. Sluicing operations have been fairly continuous throughout the year with payable results. An average of seven men were employed throughout the year.

Golden Rise Hydraulic Elevating Company, Wetherstones (F. Whelan, manager).—Area of claim, 54 acres. Sluicing operations have been continued up the flat, and the claim is said to pay its owners well. The plant being in good order, and the ground easy to work, a large amount of material is sent through the elevator. An average of seven men employed throughout the year.

Local Industry Gold-mining Company (W. O. Dawson, manager).—Area of claim, 50 acres. This plant is still operating on terrace ground at the head of Wetherstones Flat with fair results. Four men employed on the claim.

Tuapeka.

Blue Spur and Gabriels Gully Consolidated Gold-mining Company, Blue Spur (J. H. Jackson, general manager; J. Uren, mine-manager).—Operations have been fairly steady throughout the year, but the working-time is regulated by the supply of water available for sluicing and elevating. A start was made to work the deep ground, but success became marred by the collapse of the underground drainage-tunnel at a point unknown. Since then operations have been confined as formerly to the remaining higher parts of the deposit. The material in one section of the face is broken down and swept along a flume tail-race into the hydraulic lift by which it is elevated 70 ft. From the other section the material is broken down, then lifted 60 ft. by one elevator to the foot of another elevator lifting 70 ft. An average of twenty-six men are employed. Mr. J. Howard Jackson, general manager for the company, kindly furnishes the following extracts of statistics and information from his report to directors in London relative to the working of their mine. Amount of cement treated, 170,562 cubic yards; amount of water used for sluicing, 407,385,000 cubic feet; amount of water used for pumping, 31,725,000 cubic feet: total water used, 439,110,000 cubic feet. Water used in sluicing: 1902–3—No. 1 Division, 3,630 hours (453·6 days); No. 2 Division, 3,873·5 hours (484·2 days; total, 7,503.5 hours (937·8 days): 1903–4—No. 1 Division, 3,769 hours (471.1 days); No. 2 Division, 1,726·5 hours (215.8 days); total, 5,495.5 hours (686·9 days). Water used in pumping: 1902–3—403·5 hours (50·5 days); 1903–4—1,382·5 hours (172·8 days). Work and values for 1903–4: No. 1B Division—Hours sluicing, 3,769; cement, 113,070 cubic yards; gold, 1,392·66 oz.; value per cubic yard, 5·912 gr. = 11·676d.: No. 2B Division—Hours sluicing, 1,726·5; cement, 57,492·5 cubic yards; gold, 276·82 oz.; value per cubic yard, 2·309 gr. = 4.560d.: Totals—Hours sluicing, 5,495.5; cement, 170,562·5 cubic yards; gold, 1,669·48 oz.; mean value, 4·698 gr. or 9·278d. per cubic yard. Gold won, 1,669.5 oz.; value, £6,633. Cost of winning gold, £2 12s. 5d. per ounce, or 66 per cent. of its value. Amount paid in wages, £2,676; amount paid for explosives (roburite), £366: total colonial expenditure, £4,375. Average number of men employed, twenty-six. Owing to a long and severe winter followed by a dry summer the decrease of water as compared with last year amounted to 624·8 hours or 78·1 days: this also applies to decreased wages-expenditure. Early in the year the main drain failed in such a position as to render its repair beyond the means of the company; in consequence of this failure 7·8 per cent. of the available water-supply has been diverted from hydraulic sluicing and elevating (remunerative work) for the purpose of unwatering the mine. By improvements recently introduced in the pump this percentage will be lowered in future. No accidents have occurred during the year.

Kitto and Party's Hydraulic Sluicing and Elevating Company, Munro's Gully.—This claim is held and worked by a party of private shareholders, whose operations are evidently attended with a fair measure of success. The plant is now operating on the cement on the west side of the Blur Spur deposit, the tailings being discharged into Munro's Gully.

Mills and Party's Hydraulic Sluicing and Elevating Company, Munro's Gully.—This party is still elevating tailings in the bed of Tuapeka Creek. Evidently the ground pays for working, as the year's operations do not cover a large area of ground. Mr. Mills has recently sold out his share at a satisfactory figure to a small syndicate. It is proposed to increase the carrying-capacity of the water-race and otherwise improve the efficiency of the plant on the claim.

P. P. Thomas and Party's Claim, Munro's Gully.—A water-race is under construction from the head of Munro's Gully. A claim has been secured in the gully and including adjoining terrace-ground carrying fair gold. Active operations will soon be commenced with, it is anticipated, payable results.

William Hogg and Party, Tuapeka Flat.—There is a large area of auriferous terrace-ground in the valley of the Tuapeka River. This party have applied for a claim of 30 acres and have been granted first rights to seventy heads of water from Tuapeka River. A company is in process of formation to erect the necessary plant and begin sluicing operations. The ground is known to be payable but has been too wet for hand-labour. S. Lee and party had a portable engine and boiler and centrifugal pump on this claim. With the power available good results were obtained, but more powerful machinery is required to insure success.

John Roach and Party, Tuapeka Flat.—This party having secured a claim comprising terrace-ground and flats in Tuapeka Flat, a water-race from Gabriel's Gully has been applied for.

Waipori.

William Brown and Party's Sluicing Claim, Bungtown Flat.—Sluicing operations were started during the year. This is a private concern and the plant is small.

Golden Padlock Hydraulic Elevating Claim, Mitchell's Flat (J. Gare).—Area of claim, 4 acres. This claim continues to provide employment to four working shareholders. Mode of working is by hydraulic sluicing and elevating.

Reef Creek Hydraulic Sluicing and Elevating Claim, Mitchell's Flat (F. Sandager and party).—During the year a race was cut to bring in water from the Reef Creek and other gullies to work a claim at the foot of Mitchell's Flat. Actual sluicing operations have not yet commenced, but the plant is now being erected on the claim.

Farrell's Deep Lead (J. Claffey, manager).—Area of claim, 56 acres. This claim and plant is held under tribute by Mr. Robert Cotton of Waipori. The plant is operating on a small area of solid ground below the New Jutland Flat Claim. Depth of ground, 15 ft. Height of lift, 26 ft. Three men are employed. Later information regarding this claim is that the scene of operations has been transferred to the main road-line and adjacent ground, and some payable paddocks have been taken out; also that Mr. Richard J. Cotton has taken a tribute over it. Operations are now being carried out on the crest of the terrace and good gold is being obtained.

Lammerlaw Creek Hydraulic Gold-mining Company (W. E. Caudwell, manager).—A large area of ground has been put through the elevator during the past year, and there is still a few years' work ahead of this company. The claim is worked on a good system and is said to pay its owners well.

Sew Kew and Party, Lammerlaw Creek.—Area of claim, 50 acres. There is nothing new to report regarding this claim. The area of ground turned over during the year is not large, but good work is done considering the heavy clayey nature of the ground. Four men are employed throughout the sluicing season.

Bakery Flat Hydraulic Sluicing and Elevating Company, Upper Waipori (J. T. Johnson, manager).—Throughout the year operations in the sluicing claim have been entirely suspended as the water has been diverted to provide power for Johnson's submerged-jet dredge. Should this dredge prove capable of dealing efficiently with the ground the system will be adopted for the future working of the claim.

Golden Point Hydraulic Sluicing Claim, Upper Waipori (D. O'Brien, manager).—This plant is operating on terrace-ground and shallow gullies. The loss of pressure due to a very long pipe-line is very apparent. The material is broken down by the nozzle of a 7 in. pipe-line, is elevated 12 ft., and discharged through a run of boxes fitted with perforated plates and venetian riffles. The face is composed of fine gravel with an overburden of clay, the whole resting on a so-called "granite" bottom overlying the main country rock. Five and a half heads of water are brought on to the claim under a vertical pressure of 100 ft.

Post Office Creek Hydraulic Sluicing Claim, Lower Waipori (J. R. Parker).—Operations for some considerable time have not been attended with success. This may easily be attributed to the fact that the water-supply and pressure are too light to deal efficiently with the hard ground. Some very deep ground had been sluiced away until fall became lost, then the bottoms were elevated about 20 ft. The high faces look dangerous, but are carefully watched for falls. The ground operated on has been extensively mined in former days, forming as it does part of the Post Office Creek lead. Six heads could be brought from Post Office Creek, a distance of three and a half miles, to command the claim at an altitude of 283 ft. Three men are generally employed.

Munro and George's Hydraulic Sluicing Claim, Post Office Creek, Lower Waipori.—Mr. Louis Pearsall's share in this claim having been bought out by Mr. George, a new race was cut in at a higher elevation to give 240 ft. vertical pressure. The pipe-line now consists of 2,000 ft. of pressure-pipes consisting of 13 in., 11 in., and 7 in. pipes. The elevator plant consists of 11 in. dirt-pipes, 4½ in. throat with 2¾ in. jet. With the increased power the plant has been shifted back on to the "run" where operations were first begun to work the same ground over again. The gold-saving appliances consist of 48 ft. of boxes provided with riffles and perforated plates and cocoanut matting underneath. The material is elevated 31 ft. out of a paddock 21 ft. in depth. Being turned over for the second time the material is free-running. Four men are employed.

W. McMillan's Claim, Post Office Creek, Lower Waipori.—Operations in this claim are confined to sinking shafts and driving out the wash contained in the lead which skirts the Big Flat. This lead has been extensively worked, the proprietor of the claim having worked in the locality for ten years. Several shafts have been sunk as the ground became blocked out, the deepest of these being 52 ft. The wash averages 4 ft. in depth. The shaft is sunk for its whole depth through fine gravel. Very little timber is used in the shafts, as the material stands well on the perpendicular, but a large quantity of itmber is required where blocking out the wash. A drainage-tunnel has been brought up and strikes the main shaft 12 ft. 6 in. above the bottom. One head of water brought into the top of the shaft furnishes power for a hydraulic-jet pump which forces the drainage-water up 12 ft. into the drainage-tunnel. The gold is fine in appearance, but of good quality. Three men are generally employed.

Ah Yet's Hydraulic Ground-sluicing Claim, above Big Flat, Lower Waipori.—Ah Yet has been sluicing high terrace-ground for a number of years. When he first started operations there was a good fall for tailings, but as the work went on, fall became lost. The material is all free-running gravel having no clay associated with it, and with water having 100 ft. of pressure a large quantity of material has been dealt with. The face is high.

Beaumont.

Champion Hydraulic Sluicing and Elevating Claim, Beaumont (J. Fahey, manager).—This plant has been in operation for some considerable time, and a large area of ground has been turned over despite many obstacles such as buried timber and heavy drainage. The paddock runs from 58 ft. to 60 ft. in depth; material elevated 70 ft., two elevators being required for this work. The paddock plant lifts the dirt 10 ft. into the sump of the main elevator, which discharges the gravel into a run of boxes provided with ripples and perforated plates. Much of the gold is exceedingly fine, requiring care and special arrangements for saving. The dirt-pipes of the elevator are 15 in. in diameter, with 11 in. throat and 3 in. jet. Where operations are now carried on there is no buried timber, but the drainage from the Clutha River is very heavy. Over 1,000 ft. of piping is in use in the pressure-line the paddock plant consisting of 11 in. and 9 in. pipes. Eighteen heads of water are used on the claim, six heads being consumed by the pump, which is kept going continuously to cope with the drainage. The race gives a great deal of trouble in maintenance, being cut through very rough country. An average of fifteen men are employed in and about the claim..

Island Block.

Island Block Gold Dredging and Sluicing Company, Island Block.—At the end of June, 1903, arrangements with the party of tributers terminated, and the company assumed direct control over the sluicing operations. Mr. D. Weir was placed in charge of the hydraulic plant, and Mr. A. C. Perkins was appointed dredgemaster and general manager. The dredge has opened out a large paddock on the western side of the claim, while sluicing operations are confined to the eastern side; but it is desirable to evolve a scheme whereby the two systems of working may be combined in order that a larger quantity of material may be treated, and the bottom carefully cleaned up after the dredge. Much of the bottom in this claim is hard and ridgy, and therefore the dredge cannot clean it up properly. Operations throughout the year have been fairly continuous. The ground is from 40 ft. to 50 ft. in depth. Considerable expenditure is incurred in the maintenance of the water-races, dams, and mining plant. Ten men are employed in and about the sluicing claim, and seven men find employment on the dredge.

Edie and Kirkpatrick's Claim, Tallaburn (J. Kirkpatrick, manager).—Sluicing operations are still being carried on at Currie's Flat. The shallow ground and top-stripping is swept off by a splendid body of water under good pressure. The deep run of ground skirting the foot of the hill is then elevated and discharged down the tail-race into the Clutha River.

E. Curtain and F. Whelan's Sluicing Claim, Currie's Flat.—The water-supply on this claim is very poor. Very little sluicing has been done on this property for some time, as, in addition to the work of building a dam on Featherstone's Flat and extending water-race, the season has been exceptionally dry. About four heads of water will be brought on to claim in sluicing season.

Gunton's Beach Hydraulic Sluicing Claim, Horse-shoe-Bend.—This property comprises a mile and a half of the Clutha River, suitable for dredging, and also sluicing areas on the adjoining banks, totalling 93 acres. There are three water-races carrying first rights to eight heads of water. The water is conserved in dams, while the claim is fully equipped with a suitable hydraulic sluicing and elevating plant. The claim was worked for some time by a syndicate under the style of "W. R. Pearson and others," but was recently sold at auction to Mr. W. Meyer of Miller's Flat, and operations will be resumed in the near future.

Miller's Flat.

Golden Run Hydraulic Sluicing and Dredging Claim, Miller's Flat.—The company suspended active sluicing operations on this property when it was found that the water-pressure was too light to efficiently deal with the ground. Recently the ground has been let on tribute to P. McLoughlin and party. Nine men are employed in the claim. There are patches of good ground here and there, but the best of the flat has apparently been worked out. The company's dredge, which is at work on the river portion of the claim, is securing good returns.

Roxburgh.

Hercules Sluicing Claim.—This plant and claim continues to be shut down.

Roxburgh Amalgamated Mining and Sluicing Company (J. H. Waigth, manager).—The mine has been in active operation throughout the year. Progressive work is a marked characteristic of this claim, which is worked with a view to efficiency and economy. The claim gives employment to twenty men throughout the year, and is one of the mainstays of the district. Operations in the past have clearly shown the varying qualities of the wash and the uneven conditions of the bed-rock. The gold-bearing wash is not evenly distributed over the flat, but poor and rich patches alternate according as the bottom rises or falls; *i.e.*, where the bottom dips good wash is found, and *vice versa*. Two elevators have been kept going constantly, and a large amount of material has been treated. No. 1 elevator lifts the material 45 ft., while No. 2 elevator lifts 50 ft. The electric-lighting plant being used for illuminating the paddocks during night-work continues to give satisfaction.

Ladysmith Sluicing Claim (W. Donnelley, manager).—Sluicing and elevating are being conducted on the usual lines. An increased water-supply with more pressure is being brought on to the claim. Under the old system good results were obtained, and better returns are expected under the new conditions. At the time of inspection a large area of non-auriferous overburden was being stripped off in advance of the elevating plant.

Commissioner's Flat Sluicing Claim (Coulter and party; R. George, manager).—Area of claim, 22 acres. An increased water-supply has been brought into this claim, enabling more efficient work to be done. The claim is worked by hydraulic sluicing and elevating. Four men are employed.

Gothic Hydraulic Elevating Claim, Coal Creek Flat (Manuel Bros.; A. J. Manuel, manager).—This claim has an area of 12 acres, and is worked by hydraulic sluicing and elevating. Four men are employed.

Pleasant Valley Gold-mining Company, above Coal Creek Flat (John Dixon, manager).—Operations were suspended for some time owing to low water-pressure and heavy nature of material treated. Funds were not available to improve the water-supply. However, another attempt is to be made and the pressure-column will be increased in diameter. The new syndicate includes several of the old shareholders, and negotiations are being made to purchase a portion of the Hercules plant.

Butterfly Sluicing Claim, Teviot (Weatherall Bros.).—Ground-sluicing in this claim of 2 acres on the bank of the Clutha River affords employment to the two shareholders.

There are several miners working along the banks of the river near Coal Creek Flat.

Bald Hill Flat.

Carroll and Lynch's Sluicing Claim.—A privately owned hydraulic sluicing claim. Operations are steadily conducted during the sluicing season with payable results.

Mitchell Bros.' Sluicing Claim.—A ground-sluicing claim of 2 acres, in which one man finds constant employment during the season.

J. Ewing and J. Dowdall's Elevating Claim (W. McNeish, manager).—This claim continues to yield satisfactory results to the owners, and after the working-expenses there is a fair margin of profit

This is worthy of note, as it will be remembered that a very capable dredge failed to work this ground to advantage.

Last Chance Hydraulic Sluicing and Elevating Company (J. McNeish, manager).—Operations are now being conducted some distance up the flat. An area of new ground has been acquired, and the worked-out ground thrown up. The water-race gives considerable trouble owing to its being constructed through "slip" country for a considerable distance. A dam built at the head of the pressure-line has proved of great service.

Stringer and Party, Fourteen-mile Beach.—Prospecting a terrace at the Fourteen-mile Beach by shaft-sinking and driving.

NASEBY.

Little Kyeburn Hydraulic Sluicing Company, Kyeburn (R. T. Stewart and party).—Two water-races have been acquired; six sluice-heads of water are generally available on the claim. The material is elevated under a vertical pressure of 95 ft., while the water is discharged from the break-down nozzle under a vertical pressure of 90 ft. The ground is shallow but extremely rough.

The numerous sluicing-claims in the Naseby District have worked steadily during the year. There is nothing of importance to add to the complete report of last year.

HAMILTON'S.

There are now only about five men employed on this field, sluicing with the small supply of water available.

PATEAROA.

Patearoa Hydraulic Sluicing Claim.—Highly successful results have been obtained from this claim, which is the property of a small syndicate. Operations have been carried on for some time in terrace-ground, but the plant is now operating in the bed of the creek. Included in the property is an area of ground about 80 acres, proved suitable for dredging by prospecting with boring-rods. A suitable dredge has been purchased for removal to and re-erection on the claim.

Johnston Bros.' Sluicing Claim (Taieri River).—This property is situated five miles above Patearoa, on Taieri River. The owners have erected a hydraulic sluicing and elevating plant, and are reported to be doing well.

Hambly Bros.—Party ground-sluicing on Taieri River, above Patearoa

Alluvial mining in this district affords employment to several parties, chief of whom are Lusher and party, and Owen, Cambridge, and others.

UPPER TAIERI RIVER.

Canadian Flat Hydraulic Sluicing and Elevating Company.—The company went into liquidation for want of funds. The property has lain idle for some time. Considerable expenditure was incurred in carrying operations to the point at which they now stand, but further expenditure is necessary to complete the water-race. Area of claim, 130 acres; holding valuable water-rights from the Taieri Falls. The water-rights are valuable as a source not only of hydraulic power, but also of electrical power.

Messrs. McColl Bros. are working a sluicing claim on the Upper Taieri, which is said to yield fair returns. An hydraulic elevating plant is now being erected.

Fortification Hydraulic Sluicing Company, Red Swamp, Lammerlaw Ranges.—Mr. J. T. Johnson, mine-manager, Bakery Flat, supplies the following information regarding this claim: "During the outgoing season the elevating plant was operating on Swede's Gully. Some good gold was taken out, but the whole area was not payable. We are now erecting the hydraulic plant formerly on Gow's Creek, Waikaia, and expect to have a good season's sluicing next year. The work of taking the plant on to the ground has proved a difficult one. It has been carted across the high ranges to within twelve miles of the claim. From that point it will be sledged to the claim. Alan McColl is in charge of operations. Three men are employed.

SERPENTINE.

Messrs. Gunton Bros.' Sluicing Claim.—A party of working shareholders working a sluicing claim which was purchased from the Enterprise Hydraulic Sluicing Company.

Mining on the Serpentine and Lammerlaw Heights is chiefly confined to diggers holding miners' rights. Although difficult of access, and lying at high altitude, in bleak country, these districts afford employment for nearly seven months in the year to diggers, who return to their claims year after year when the winter months are past. The gold obtained is generally of a heavy nature, much of it being specimen quartz. The country is usually entered from Roxburgh, Miller's Flat, Patearoa, or Deep Stream.

DEEP STREAM.

Deep Stream Amalgamated Hydraulic Sluicing Company (Limited), Deep Stream (A. C Buckland, manager).—Area of claim, 106 acres. Operations during the year were successful, and the work is being pushed on up the flat. About fifteen men were employed during the year. When the season is favourable, two elevators are kept steadily at work, but the ground is becoming shallow towards the head of the flat. At the time of my visit the claim was shut down owing to shortage of water during a long spell of dry weather.

SUTTON.

Hibernia Sluicing Company, Matarae (Donald Ross and party).—Area, 21 acres. This claim, which is worked by ground-sluicing, is situated on terrace-ground adjacent to Taieri River, at Matarae. Four men are employed.

ROCK AND PILLAR.

Rock and Pillar Sluicing Company, Rock and Pillar (N. Moloney and party).—Two men are employed in this alluvial sluicing claim on Wandle Creek. A shaft is also being sunk in the locality by the same party in search of a coal-seam.

IDABURN.

Wheeler and Party's Sluicing Claim.—Ground-sluicing. Two men.

BLACKSTONE HILL.

William Wade and Son.—Extended sluicing claim of 1 acre. Generally one man at work.
H. Armitage.—An alluvial claim of 1 acre, in which three men find employment.
Robert Johnstone, Hill's Creek.—Ground-sluicing claim. Two men employed.
C. Rose, Hill's Creek.—Ground-sluicing.
William Hickey, Hill's Creek.—Ground-sluicing.
Turnbull and Hayes. Ground-sluicing on Rough Ridge.
McAdie Bros., German Hill, Ida Valley.—Ground-sluicing.
D. Nicoll.—Fossicking on Garibaldi Diggings.
J. Wilkinson and F. Cavendower.—Fossicking on the Gimmerburn Creek.

Ground-sluicing around this locality is confined to a few parties working with a limited supply of sluicing-water. Some splendid samples of gold are obtained in the Blackstone Hill Diggings.

ST. BATHAN'S.

Eagle and Gray's Sluicing Claim.—Area of claim, 3 acres. No work has been done on the property during the past year.

Scandinavian Water-race Company, Surface Hill (N. Nicholson, manager).—This company holds several areas totalling 100 acres. An average of twenty-two men are employed throughout the sluicing season. The mode of working these claims is by hydraulic sluicing and elevating, but on account of the severity of the Otago Central winter, sluicing is not continuous throughout the year. This company operates on an extensive scale, and consequently incurs large expenditure in wages, upkeep of races and of sluicing plant.

United M. and E. Company (P. T. O'Regan, manager).—Similar to the Scandinavian Company, the operations of this company are conducted on an extensive scale. The top material is ground-sluiced off, and the remainder is elevated 82 ft. in vertical height. Seven men are usually employed.

P. Hanrahan's Sluicing Claim.—Claim worked by hydraulic sluicing and elevating. Three heads of water are supplied from the Scandinavian Company's race.

Shamrock Gold-mining Company, Hawkdun Station (J. Mooney, manager).—Operations are continued in this claim on the same lines as formerly. The ground, which is not deep, is worked by ordinary hydraulic sluicing and elevating methods.

CAMBRIAN'S.

Shepherd's Flat Claim.—P. McCarthy and G. O'Hara have taken this claim on tribute, and are working it by hydraulic sluicing and elevating with water brought in from Dunstan Creek.

R. Jones and Morgan.—Ground-sluicing at Lauder.

G. Jones and Son.—Ground-sluicing at Cambrian's.

Vinegar Hill Hydraulic Sluicing Company, Cambrian's (Thomas Morgan, manager).—Although a large body of water under high pressure is brought on to this claim and a large amount of material sluiced away, the results have not been very satisfactory. Sluicing operations were resumed this season at a lower level, and better returns are expected.

Fordham and Gay's Hydraulic Sluicing Claim, Cambrian's.—Area of claim, 5 acres. Method of working, hydraulic sluicing and elevating.

MATAKANUI.

Undaunted Gold-mining Company, Matakanui (T. C. Donnelly, manager).—This claim, which has an area of 124 acres, is worked by hydraulic sluicing and elevating. Nine men are employed. Fifty-five acres of ground have been worked, which yielded at the rate of about 1,000 oz. of gold per acre.

Ewing and McConochie's Sluicing Claim, Tinker's (J. Naylor, manager).—This claim is now amalgamated with the Sugar-pot Company under the style of "The Tinker's Gold-mining Company."

Tinker's Gold-mining Company, Tinker's (J. Naylor, manager).—Hydraulic sluicing and elevating. This company is the outcome of the amalgamation of the Sugar-pot and Ewing and McConochie's properties at Tinker's. Eighty-eight acres are included in this area.

J. Symes and Sons' Sluicing Claim, Matakanui.—A privately owned hydraulic sluicing plant at work on a claim below Matakanui Township.

Matakanui Gold-mining Company (H. Norman, manager).—Area of claim, 45 acres. Mode of operations: hydraulic sluicing and elevating, good results being obtained during the year. Seven men are employed.

DRYBREAD DIGGINGS.

These diggings are now practically abandoned to a few fossickers.
H. Glassford and C. Johnston.—Ground-sluicing.
C. Wilson.—Ground-sluicing.

DEVONSHIRE DIGGINGS.

This locality is now almost deserted by miners.
S. H. Templeton has a ground-sluicing claim of 2 acres, which affords employment to two men.

Ophir.

There is very little mining now in this district.

Charles Wilson and party have an alluvial claim of 2 acres at German Gully, Black's, in which two men are employed.

At Black's No. 3 the attempt to locate the seam of payable wash by deep sinking did not prove a success, and the undertaking was abandoned.

Springvale.

Springvale Sluicing Claim, Springvale, near Alexandra South (J. Gartley, manager).—Sluicing operations continue to be conducted in the gullies on terraces in the neighbourhood of Springvale.

Alexandra South.

Alexandra Bonanza Gold Dredging and Sluicing Company, Galloway Flat.—The operations of this company gave promise of assuming proportions of some magnitude. A splendid water-race was cut in and a dam built at Greenland Swamp, capable of storing a body of water two miles in length by half a mile in width, but, unfortunately, the sluicing plant erected on the claim proved altogether inadequate to deal with the barren overburden standing 60 ft. high in the face. Operations have been at a standstill during the greater part of the year. The annual report of directors to the shareholders says: "It is to be regretted that the gold-earnings have not yet covered working-expenses, but this is to a large extent due to the dipping of the bottom, which involves much extra time in driving away the wash, and has involved unexpected delay and expense in bringing up a deeper tail-race to facilitate its removal. It will be apparent that in working low-grade gravel, of which the overburden largely consists, what is to be aimed at is that the stuff should be put through in quantity. The directors are pleased to say the race is proving itself to be an efficient job, and may be relied upon as a permanent asset, as it commands a large area of auriferous ground which cannot be worked without it."

Tucker Hill Sluicing Company, Alexandra South (Rivers and Gartley, owners).—During the year a large dam has been built and the water-race improved in order to bring in an increased water-supply. This was rendered necessary, as the owners had entered into an agreement to supply the Borough of Alexandra with one head of water. Ground-sluicing operations are being conducted on the terraces between the foothills and the eastern bank of the Lower Manuherikia River.

Manorburn Gold-mining Syndicate, Galloway Station.—This syndicate, having taken over Edward Appleton's claim, is arranging to bring in a water-race with a carrying-capacity of ten heads to work the property by hydraulic sluicing.

Golden Bend Gold-mining Company, near Alexandra South.—The syndicate, having purchased a steam-boiler, engine, and 10-in. diameter lifting-pump, sunk a shaft on the property to the auriferous wash traced into the terrace by the Golden Link dredge. Operations were subsequently interfered with by a heavy flood which unseated the boiler, engine, and pumping gear, and filled up the shaft. Operations have since been at a standstill.

J. Kane and F. McCarthy, Blackman's Gully.—This is a ground-sluicing claim in Blackman's Gully. The ground is fairly shallow, and five heads of water are brought in from Blackman's Creek. Operations have hitherto been successful.

Robert Prophet's Claim.—One man finds employment in this sluicing-claim of 2 acres.

Several other parties are ground-sluicing in Blackman's. There are about twelve men engaged mining in the district, including Conroy's Gully.

Clyde.

Keleher's Sluicing Claim, Clyde.—Ground-sluicing at head of Waikerikeri Creek with water brought in from Leaning Rock Creek. One man at work.

Buckley and Joe.—Doing a little ground-sluicing on a terrace at Shepherd's Flat, Fraser River.

Hookey and McConnell.—The high state of the Fraser River has prevented the bed of the river being worked for a considerable time.

Cromwell.

Quartz Reef Point.—Several small parties are prospecting and sluicing in this locality; also, behind Cromwell Township a party of Chinamen have a sluicing claim on the bank of the Kawarau River, from which good results are obtained.

Around Lowburn a few parties of miners are engaged ground-sluicing on the terraces.

Bannockburn.

A. T. Aitken's Claim.—A ground-sluicing claim of 2 acres, in which two men find employment.

Crabb Bros.' Claim.—Water for ground-sluicing is brought in from Shepherd's Creek in the Wealth of Nations' water-race. There is a heavy overburden of 60 ft. to 80 ft. to sluice away in this claim. Three men are at work.

J. Lawrence and Hancock.—Ground-sluicing claim. Two men.

Gair and Murray.—Sluicing claim of 2 acres, near Adam's Gully. Two men.

There are a few other miners in this locality, each holding ordinary claims of 1 acre in area.

Kawarau Gorge.

Robertson's Terrace.

Prospecting operations have been carried on for the greater part of the year on Robertson's Terrace, at the back of Gee's Flat. James Robertson, having struck gold-bearing wash in the terrace, took up an extended alluvial claim of 5 acres. After driving out a good area of wash the owner sold out to T. Craig, who is now actively engaged mining.

William Foreman's Claim.—This is an extended alluvial claim of 4 acres, on which a considerable amount of work has been done by shaft-sinking and driving.

Gordon and Rowe.—This party holds a special alluvial claim of 12 acres. The claim has been well prospected by sluicing and driving, but with unfavourable results.

There is evidently a good area of auriferous ground on this terrace and on Gee's Flat, but absence of water on Mount Difficulty (on the western side of the Kawarau River) makes it impossible to work the ground to pay. The above claims are in an ancient river-bed on the mountain-side, at least 200 ft. above the present level of the Kawarau River bed.

Higher up the Kawarau Gorge, W. Ritchie and party prospected a terrace opposite the Roaring Meg Creek. The shaft attained a depth of 100 ft., and a drive was put in for a distance of 100 ft. without striking the back reef. A winze was then put down 16 ft. only to meet with water. The party then abandoned the claim. George Cockburn is now prospecting on the same terrace.

Cardrona.

Walter Little's Hydraulic Sluicing Claim, Cardrona Valley (Edward Barker, manager).—This plant is now in full working-order and the claim is being well opened out. The ground is about 20 ft. deep with fairly heavy wash, but the stones are a convenient size for handling. About twelve heads of water are brought in having a vertical pressure of over 300 ft. The pressure-pipes range from 22 in. to 13 in. in diameter while the paddock plant consists of 9 in. pipes. The material is elevated about 40 ft. Last season, on account of scarcity of water, work was necessarily not continuous, but a better supply is anticipated this season and good returns are expected. Six men are employed. It is understood that the success attendant on Little's efforts, caused attention to be directed to the possibilities of other portions of the valley as payable properties worked by hydraulic system.

Loft and Party.—This party is engaged driving out the wash in the bed of the valley above the township of Cardrona.

Magnus Henderson and Party.—A party of three men holding a sluicing claim on Branch Creek.

Edward Barker and Party.—This party having taken up an area of ground below Branch Creek, intend constructing a race to work the ground by hydraulic sluicing and elevating.

Courtney and Fleming are still sluicing on Criffel Face.

Cardrona Valley.

A large amount of gold has been obtained from the bed of the Cardrona River opposite the township. Recently it was understood that a syndicate would purchase the Cardrona Hydraulic Water-race which carries in ten heads of water from Cardrona Creek, and would work this ground. The race carries second rights and commands an extensive gold-bearing area in the locality.

Luggate.

Logan and Party have a small elevating plant at work in the bed of the Luggate Creek.

White Bros. and Sheath.—This is a special alluvial claim of 12 acres on Luggate Creek.

James Partridge's Claim.—The claim is situate on Mid-run, near Luggate.

Harrington and Party also have a sluicing claim in this locality.

Alluvial mining on Mount Pisa and in the various gullies affords employment to a number of fossickers.

Matatapu.

McLaren Bros.' Hydraulic Sluicing and Elevating Claim.—At the time of inspection the men were all away repairing the head-race preparatory to bringing in the water to resume this season's sluicing operations. The plant is well equipped and the claim gives employment to three men. Pressure-pipes are 11 in. and 9 in. with a paddock plant of 7 in. pipes. The material is suitable for elevating and is lifted about 18 ft. and discharged over a run of boxes fitted with gold-saving appliances. It is understood that the returns of gold are satisfactory.

Arrowtown.

King Edward Hydraulic Sluicing and Elevating Company.—The water-race belonging to this company was purchased by Mr. R. Pritchard of Arrowtown, and disposed of by him to the Arrow Falls Sluicing Company who have diverted it on to their claim on the Arrow River. Mining was consequently at a standstill in the immediate vicinity of Arrowtown until a claim was taken up in the bed of the Arrow River below the township by Messrs. Fealey and Hay Bros.

Fealey and Hay Bros.' Sluicing Claim.—This claim is situated on the Arrow River about one mile below Arrowtown. Water is collected from the Crown Terrace, sufficient being obtained to work one shift of eight hours. The ground is from 10 ft. to 20 ft. deep, and under a pressure due to a vertical head of 300 ft., the material is elevated (on the Smith's jet principle) about 20 ft. There are 600 ft. of 7 in. pressure-pipes, the jet is 2 in. in diameter and the discharge-pipes are 9 in. in diameter. Most of this ground has been previously hand-worked, but it is understood that the three men engaged find remunerative employment in this claim.

Arrow River.

Arrow Falls Sluicing Company (J. A. Miller, manager).—This claim is now well advanced from the gorge and it is desirable that the work should be prosecuted more quickly. The Arrow Flat water-race was bought by the company enabling twelve heads of water to be brought on to the claim under a vertical pressure of 330 ft. 1,600 ft. of 18 in. pressure-pipes have been laid down and the sluicing plant installed. It is also proposed to instal a complete electric lighting and power plant. Eight men are employed. After successfully overcoming exceptional natural difficulties the company should now be able to look forward to a season of prosperity. Since the claim was inspected the Arrow River has been visited by

a heavy flood which completely submerged the plant in this claim and otherwise considerably retarded the season's progress.

Bremer's Claim, Bracken's Gully.—This claim was recently sold at auction to a syndicate. The property comprises an extended alluvial claim of 2 acres and rights to eight heads and a half of water.

Robert S. Cooper and Party, Bracken's Gully.—Ground-sluicing claim of 3 acres.

Peter Henderson and Party, Bracken's Gully.—Ground-sluicing claim of 4 acres.

In Arrowtown District there are a number of fossickers making wages along the course of the Arrow River, on Whitechapel Flat, and around the junction of the Arrow and Kawarau Rivers.

Macetown.

Anderson and Party, Eight-mile Hill.—Area of claim, 30 acres. Water is brought in from Deep Creek to sluice away terrace-ground, 15 ft. to 20 ft. in depth. Five men are employed in the claim.

William Reid and Party, Red Hill.—Area of claim, 3 acres. The claim which is situated on a high terrace overlooking the Arrow River is worked by ground-sluicing.

Around Macetown on the Annie and Twelve-mile Creeks and on the Upper Arrow, there are about a dozen fossickers, principally Chinese.

Glenorchy.

Valpy Bros.' Claim, Glenorchy, Head of Lake Wakatipu.—Area of claim, 15 acres. The claim is situated at the Twelve-mile Glenorchy, and is worked by hydraulic sluicing and elevating. Three men are employed.

There are several other small claimholders in this district.

Queenstown.

Reid and McDonald, Twelve-mile.—This is a hydraulic sluicing and elevating claim situated twelve miles above Queenstown, near Lake Wakatipu. Working face 320 ft. in height from bottom of paddock to the surface.

Arthur's Point.

Arthur's Point Hydraulic Sluicing and Elevating Company, Arthur's Point, Shotover River (H. Angelo, manager).—This claim is still being worked by Angelo and party.

James Tyrell and Others.—This party having taken up a claim of 14 acres for hydraulic sluicing and elevating on the banks of the Kawarau River, near junction of Shotover River, the pipes and sluicing plant of the Big Beach Company, Arrow River, were purchased and are now installed on the claim.

Moonlight.

Moonlight Sluicing Claims Nos. 1 and 2, Moonlight Creek, Queenstown.—These claims at one time gave promise of great success and were meant to be worked on an extensive scale. A costly water-race was constructed on No. 2 claim, and sluicing-plants placed on the claims. The claims are now in the hands of tributers as the operations of the companies did not apparently meet with success.

Shotover River.

Reissler and McCormack, below Long Gully.—This claim is situated in the bed of Shotover River. A covered-in tail-race is being brought up and the material hand-stripped out ahead.

Ward and Smith, below Long Gully.—This claim is worked when the Shotover River is low by Smith's jet-pump system of hydraulicking.

Thompson and Robertson, below Long Gully.—A water-race is brought out of long Gully for a distance of two miles. Last season's work in the river was not remunerative to the party, and this summer the race is being extended to command a lower claim.

Coulter, Son, and Sainsbury, below Deep Creek.—A piece of ground in the river is worked in the winter by Smith's jet-pump elevator.

Boomerang Terrace.—Three Chinamen are sluicing here.

Blue Jacket Sluicing Claim, Deep Creek.—J. S. Collins brought in a water-race a distance of two miles carrying six heads of water to work this claim. When the river is favourable the river-bed is worked by Smith's jet-pump elevator, and at other seasons ground-sluicing is carried on in the terraces. Area of claim, 10 acres. Three men are employed.

E. Sainsbury, Maori Point.—One man sluicing on the terrace.

Davis's Sluicing Claim, Stony Creek Terrace, Skipper's.—Sluicing operations on an extensive scale are being carried on in this claim. The immense amount of material is sluiced down a long tail-race, paved with steel rails, and discharged into the Shotover River.

Robert Johnston's Sluicing Claim, Pleasant Creek Terrace, Skipper's.—Work on this claim is not of a very progressive nature. Apparently very little sluicing has been done latterly.

Sorenson and Henderson, Pleasant Creek Terrace.—Area of claim, 13 acres. Two men are driving a tunnel into the terrace intending to block out the auriferous wash.

Skipper's Sluicing Company, Londonderry Terrace, Skipper's (John Corbett, manager).—The mine-manager supplied the following information regarding this claim: "The water-race is six miles long and carries about eight Government heads of water. There is 7,061 ft. of piping on the race in addition to iron fluming. There are two dams capable of storing a supply of eight heads of water for sixteen hours' use on the claim. The tail-race tunnel is 340 ft. in length, and fitted with iron boxes 3 ft. wide on a grade of 1 in 12. The boxes are provided with steel rails inside to act as gold-saving ripples. At the lower end there is an undercurrent fitted with matting, and from this about 25 per cent. of the gold obtained is recovered. The sluicing plant consists of 1,000 ft. of 11 in. pipes with necessary valves and hydrants. Owing to the severity of winter frosts at this altitude the claim is shut down about fourteen

weeks during that season. About 85,000 cubic yards of material were sluiced away last season and the returns were payable."

Stevenson and Aspinall's Sluicing Claim, Skipper's Point.—Two men are employed in this claim; breaking up the heavy stones and boulders in the wash keeps the men fully employed.

Upper Shotover River.

Smith and Son's River-bed Claim, above Skipper's Point.—The method of working this claim is by wing-damming the river and elevating the material on Smith's jet-pump elevator principle, a system originated by the holders of this claim.

Rogers and Johnstone, above Skipper's Point.—This claim consists of 10 acres of the river-bed and 4 acres of terrace-ground. The river-bed portion is worked by a Smith's jet-pump elevator.

Strahle and Helms, above Skipper's Point.—This is also a river-bed claim worked by the jet-pump principle. Two men are at work.

William Palmer, Shotover.—Ground-sluicing. One man.

Monk's Terrace Sluicing Claim, Upper Shotover (J. Lynch, manager).—This is a ground-sluicing claim situated on Monk's Terrace, Upper Shotover. An average of four men are employed in the claim. The gold obtained is of a very coarse nuggety nature.

Monk's Creek Syndicate, Upper Shotover.—About 5 acres of Cook's Terrace have been pegged out as an alluvial claim for this syndicate.

Sandhills Hydraulic Company, Upper Shotover (Hamilton and Lynch).—This claim is situated at the Sandhills and has an area of 40 acres. Four heads of water are brought in from Stony Creek, and under a vertical pressure of 320 ft. elevate the material 18 ft. Four men are employed during the sluicing season.

Davis Bros.' Claim, Upper Shotover.—This is a ground-sluicing claim on Guy's Terrace. Three men are generally employed. The ground is very rough and the face of material in the terrace is over 60 ft. in depth.

Muddy Creek Sluicing Claim, Upper Shotover.—This claim originally belonged to a company, but the property was recently disposed of to Mr. H. Heideman who intends to resume sluicing operations. Four men are generally employed in this claim when in working-order.

R. Anderson, Muddy Creek Terrace, Upper Shotover.—Ground-sluicing. One man. The ground is very deep.

Dwan, Costelloe, and Cummings, Muddy Creek Terrace.—This claim is worked by ground-sluicing on the river frontage of the terrace. Three men are employed.

Nevis.

Our Mutual Friend Hydraulic Sluicing and Elevating Company (Masters and Adie Bros.).—Area of claim, 15 acres. The claim is situated at the back of Galvin's Terrace and comprises ground which had been previously driven out. Work is carried out on the usual lines under the supervision of Mr. W. W. Masters, the manager. Four men are generally employed.

Robertson and Party's Hydraulic Sluicing Claim.—This claim adjoins that of Masters and Adie and is worked on the same lines. During sluicing seasons a good supply of water, under a vertical pressure of 400 ft., is brought on to the claim and the ground worked to a depth of 20 ft. This claim affords employment to four men.

Keep-it-Dark Gold-mining Company, Galvin's Terrace (J. H. Robertson).—At the time of inspection operations were again suspended, but during the season a considerable amount of work had been done. A drainage-tunnel was brought up to the shaft to relieve the pumping-height. Some driving was done at the back of the terrace to strike the lead of gold, but the results were unfavourable and the property has been closed down indefinitely.

Glenore Claim (Rip and Tear), Nevis (J. Ellis, manager).—A winding and pumping plant was procured and a shaft sunk 30 ft. Drives were then put in east and west to exploit the area. An air-shaft was also put down. Expectations were not realised, and the plant was at a standstill when the mine was visited for inspection. No expense was shared in making the winding-shaft and overhead gear of a permanent character. A larger pump is now required to cope with the increased water met with in driving. The members of the syndicate are actively engaged in dredging pursuits during the summer months, and took up this work as a means of employment in the winter months when the dredges are unable to work in consequence of the severe frosts.

Thomas Shaw, Lower Nevis.—This is a ground-sluicing claim of 2 acres in which one man finds employment.

Robert Ritchie, Lower Nevis.—This is a special alluvial claim of 19 acres worked by ground-sluicing.

Upper Nevis.

Upper Nevis Sluicing Claim, Cinnabar Flat.—After a long period of inactivity, it is understood that this claim has been let on tribute to Kitto and party. The company did very little sluicing on account of the poor supply of water, and evidently a large outlay would be required to bring in a suitable water-supply.

Joe Park's Hydraulic Sluicing Claim, Upper Nevis.—Area of claim, 56 acres. Operations are being conducted on the usual lines. A fair supply of water is brought on to the claim under a vertical pressure of 220 ft. The gold is fine in character.

Edward McMillan's Sluicing Claim, Cameron's Gully, Upper Nevis.—Area of claim, 3 acres. The method of working is by hydraulic sluicing and elevating. Two men generally find employment in this claim. The ground is shallow and the sluicing plant light.

McDonald's Hydraulic Sluicing and Elevating Claim, Upper Nevis (R. McDonald, manager).—Operations are still being conducted on The Remarkables side of the Upper Nevis Flat. Returns are favourable, and it is possible that an early start will be made to bring in a race at a higher level for a water-supply to enable the deep ground to be worked by elevating. Six men are employed.

O'Connell and Graham's Hydraulic Sluicing Claim, Upper Nevis.—This property is owned by a private syndicate. The returns obtained are said to amply justify the expenditure incurred in laying down the sluicing-plant, and bringing in the water-race. The electric light is in use on this claim for night-work.

Undaunted Sluicing Claim, Upper Nevis.—Heavy floods in the Nevis River carried away the head of the flume, and operations on that area became suspended. A water-race was then brought in from the Little Scotchman Gully to command ground at the head of the claim. It was intended to work this by hydraulic sluicing and elevating, and at the time of inspection the manager was laying down the sluicing plant.

On the 22nd December, 1903, a few weeks after my visit, the manager, Mr. R. Williamson, was working in a trench about 10 ft. deep for the purpose of laying the pressure-pipes under the road-line, when one of the walls collapsed off a slippery back inflicting injuries which resulted in death. The Coroner's Jury brought in a verdict of "Accidental death," no blame attachable to anyone, and the jury were satisfied that the accident could not have been foreseen owing to the slip off an invisible greasy back.

Nokomai.

Golden Lion Claim, Nokomai (D. MacGregor, manager).—Hydraulic elevating, 108 ft. in one lift. The claim has not been properly reopened this season. When the frost broke up and the water began to come in again, pumping operations were started, but for various reasons—chiefly financial—no progress was made. Should sufficient money be raised to give the claim a further trial the wash will probably be driven out. This will do away with the necessity for elevating about 90 ft. of barren overburden. Mr. Cummings, the secretary, was interviewed at his office in Invercargill, and his attention drawn to various matters in relation to the safe working of the claim, should the method of underground-mining be adopted. Some driving had been done before the previous winter set in when operations were suspended. A start is now being made to clear out the drives and get the claim in working-order preparatory to systematically blocking out the auriferous wash. The main drive is in 128 ft. and the ground stands well, only the roof requiring to be close-timbered. Should driving operations be prosecuted it will be necessary at an early date for the company to consider the advisability of sinking a shaft for ventilation and second outlet purposes. Nine men are employed in and about the works. The claim is advertised for sale.

Nokomai No. I Sluicing Claim, Nokomai (J. Roberston, manager).—Work in this claim is prosecuted steadily and with satisfactory results, the claim being a consistent gold-producer. The sluicing and elevating plant is well handled by the manager who employs on the average fifteen men in and about the claim. Throughout the valley the average depth is 40 ft. The material is very compact schistose *débris* and the paddock-walls stand very well when opened out. A new paddock was being opened out at the time of inspection, and some 20 ft. had to be sunk through before main bottom would be reached.

Nokomai No. II. Sluicing Claim, Nokomai.—Unlike the No. I. claim this plant is elevating comparatively shallow ground. The material, which averages 15 ft. in depth, is easily elevated. The water-supply and pressure are poor, and after being elevated about 26 ft., the tailings require to be blown away from the dump which entails loss of both time and water. About fifteen men, of whom Chinese form the greater part, are employed in and about this claim.

J. Copland has a ground-sluicing claim above the Nokomai No. II. Company's claim, the overflow of water from which enables him to work.

Victory Hydraulic Sluicing and Elevating Company, Nokomai (W. France, manager).—The original company went into liquidation and the property was bought by Mr. France and several other large shareholders. A new dam was built and the water-supply improved, but further operations have not apparently met with the desired success.

Waikaia.

Argyle Sluicing Company, Waikaia (J. Stewart, manager).—Under efficient management the work done on this claim is of a very progressive nature, and the results are in accordance therewith. Nine men are usually employed. It is proposed to put a dredge, worked by water-power, on the lower part of this claim above where the Hessey Company's dredge is operating successfully. For this reason elevating operations have been discontinued on the flat and the water transferred to a large area of adjoining terrace-ground.

Winding Creek Hydraulic Sluicing Claim, Waikaia.—Some work has been done on this property by a party of tributers when water was available. The company recently sold out to a small local syndicate.

Gow's Creek, Gold-mining Company, Waikaia.—Nothing done during the year. The plant is being dismantled for removal.

Piano Flat Gold-mining Company, Waikaia.—Operations proving unsuccessful the claim was closed down and plant has been idle throughout the year.

Chow Yoke and Party's Claim, Whitecombe.—D. Matheson, jun., to whom this property belongs, had two men driving last winter for a few months. There are a number of small claimholders scattered over this district, principally in the higher altitudes, where only summer work is practicable.

Charlton.

Ewen McGregor's Alluvial Claim, Mataura River.—The claim is situated opposite Charlton on an alluvial flat on the banks of the Mataura River. A plant has been installed consisting of a boiler, engine,

winding-gear, and a centrifugal-pump. A scoop travelling on a wire-rope is worked from the winch, and when filled, is raised to the run of boxes and the contents tipped therein and passed through ordinary sluice-boxes, water being supplied from the centrifugal pump. The ground is 10 ft. in depth having a lignite "bottom" and carrying fine gold. At the time of my visit alterations were being made to the machinery.

ROUND HILL.

Round Hill Gold-mining Company, Hydraulic Sluicing and Elevating Claims (Frederick Hart, manager; A. Reynolds, secretary).—No. 1 elevator: Lifting 35 ft.; seventeen and a half heads of water used under a pressure of 300 ft. Elevator-jet requiring ten heads and seven and a half heads for the breaking-down nozzles, of which there are two used alternately as required. A large paddock opened on what was formerly known as Booth's Claim, Canton Hill, is being cleaned up to the diorite "bottom." Occasional rich patches were struck in the inequalities of the rising bottom which the early miners in driving had been unable to clean up carefully owing to the large stones and heavy nature of the ground generally. Stones ranging in size up to 29 tons in weight, also large tree-stumps and forest-trees lying buried in the overburden, have been successfully handled by the aid of the hydraulic hauling plant, without which the paddock could not have been profitably worked. Perforated plates are laid in the run of intake-boxes where one-third of the gold is recovered. As indicating the fineness of Round Hill gold, Mr. Reynolds showed me seven "nuggets" selected from the season's gold, value £11,000. The "nuggets" weighed 6 gr., one piece weighing 2 gr. being the largest Mr. Reynolds had seen coming from the company's claims. No. 2 elevator: Paddock sunk on new ground on the western bank of Ourawera Creek. This area had not been considered payably auriferous, but a series of bores put down had proved a large area of payable ground which may be expected to last many years. The run of gold appears to be making in the direction of Pont's Gully on the Pahia side. Face, 35 ft., elevating 64 ft. vertical; sixteen heads of water used. Between 50 and 60 acres of ground running from 30 ft. to 80 ft. in depth has been worked by this company since commencing work in the year 1892. Thirty-five men are employed. Platinum occurs in the wash and is obtained in the proportion of about 1 oz. of platinum to each 100 oz. of gold recovered. A prepared test resulted in 569 measured tons of fine sandy material being elevated by No. 1 elevator in one hour, but the average quantity of dirt per elevator treated, runs between 50 and 60 tons per hour; value, 2d. per ton; working expenses, $\frac{15}{16}$d. per ton. An experiment made of running old tailings over again for one week resulted in less gold being obtained than paid wages. The substitution of malleable cast-steel in place of cast-metal for working-parts of the elevators has proved successful. Deflectors, straight and curved, in use in the elevators have the effect of economizing power and increasing effect. The deflectors which are placed in the last piece of the pipe-line above the T-piece to the jet are 2 ft. 10 in. in length, and divide the pipe into two equal sections longitudinally. The straight deflector was Mr. Hart's own idea, the curved deflector having been evolved by the company's managers' and leading men. Both Mr. Reynolds and his mine-manager, Mr. Hart, are more than ever convinced that the Round Hill gold is derived from the diorite as further proved (they hold) by the work done on the Rip and Tear claim. When this claim was sluiced three years ago the bottom was cleaned until scarcely a speck of gold could be found in a prospect. The surface of the diorite bottom having weathered during the interval, prospects of two hundred colours to the shovel of dirt can now be obtained; and this result is also obtainable from the vertical faces of diorite in that claim, and in other places where tail-races had been cut in the diorite and weathering or oxidization had subsequently taken place.

Ourawera Gold-mining Company (James Coulling, manager).—Sluicing and elevating, 61 ft.; ten heads of water; pressure, 280 ft. vertical. Face 50 ft. in height, carrying two beds of lignite, tree-roots, buried timber, and heavy stones, handling of latter being facilitated by the use of hydraulically driven log-hauler. Twelve to fifteen years' work ahead cleaning up old bottom and stripping main bottom (where solid) left by old diggers, owing to shortage of water for treating such hard ground. About 15 acres have been worked. Twelve men are employed.

Smith Gold-mining Company (David Smith, manager).—Cleaning up and elevating the bed and banks of Ourawera Creek. Not more than 5 acres of ground have been worked. Six heads of water in use under a pressure of 150 ft. The plant will shortly be shifted to the terrace on Meldrum's Gully, the site of an old diggings. On the 3rd June, 1903, Edward Deegan, nozzleman, slipped and fell in front of the nozzle, the water-flow dashing him against a tree-stump. Deegan sustained fracture of three ribs.

O'Brien's Claim (Thomas O'Brien).—Ground-sluicing in Italian Gully. Two men.

Fitzmaurice and Birkenhall.—Ground-sluicing in Italian Gully. Water picked up from Round Hill Company's overflow. Two men.

Arthur Dandy.—Elevating at head of Jewett's Gully. Using Moffatt's race; water partly overflows from Ourawera and Round Hill Company's races, also own race brought in from a side creek.

H. Driver.—Ground-sluicing at Lake George.

There are about twelve Chinese, two of whom are steadily employed, the remainder engaged fossicking on the diggings.

The season having been a good one for water, the claims have consequently done very well.

OREPUKI GOLDFIELD.

The western side of the field being practically worked out, attention is being directed to the considerable area of bush land lying in the direction of Round Hill and Pahia. A strong party of Chinese, fully alive to the situation, having acquired valuable water-rights, are now engaged cutting a water-race to command ground held by them on Falls Creek. About 130 European and thirty Chinese miners are engaged on the field. Water is in fair supply this season, and almost all the claims are fully employed.

Tuanoa Creek Sludge-channel.

Messrs. Hennessey are engaged ground-sluicing; two men employed. Reichel Bros., two claims, ground-sluicing; three men employed. Clyme, ground-sluicing; one man employed. M. and B. Reid,

ground-sluicing; two men employed. Barclay and Jarvis, sluicing; two men employed. W. Taylor, driving and blocking out; one man employed. Love and Smith, driving and blocking out; two men employed. Bennett and Sons, driving and blocking out; three men employed. Several claims recently held by Europeans have been acquired by Chinese, who have leased water brought in from the tributaries of Tuanoa Creek.

Klondyke Spur, on Tuanoa Creek.—Dawson and party, sluicing; three men employed. Turnbull Bros., sluicing; two men employed. Evans Bros., sluicing; two men employed. Whalen and Wallace, driving and blocking out; two men employed. Merrilees and McEwan, driving and blocking out; two men employed.

Camp Gully, a Tributary of Tuanoa Creek.—Currie and party, driving and blocking out in the terrace; five men employed. Barry and party, driving and blocking out; two men employed. Evans Bros., driving and blocking out; two men employed. Alderson driving and blocking out; two men employed.

Branch off Clark's Gully.—Arnett and Fryer, sluicing; two men employed. King Bros., sluicing; two men employed. John Whalen, sluicing; two men employed. Fortune and Son, sluicing; two men employed. Chinese party, sluicing; four men employed. Horan and Herbert, driving and blocking out; two men employed. Hall and party, sluicing; three men employed. Hall and party, driving and blocking out; three men employed.

Prince's Flat.—G. Black and Son, sluicing; two men employed. Chinese, sluicing; one man, employed.

Buckley's Gully.—Homer and party, sluicing; three men employed.

Waterloo.—Chinese, sluicing; about fifteen celestials employed.

Mary Ann Gully.—Fitzgerald Bros., sluicing; three men employed. Riddell Bros., sluicing; four men employed. Cooper and Son, sluicing; two men employed.

Stony Creek.—Otway and party, driving and blocking out; two men employed.

Sandy Creek Sludge-channel.

Branch off Sandy Creek.—Forbes and King, sluicing; three men employed. Forbes and King driving and blocking out; two men employed. Sorenson, sluicing; three men employed. Evans Bros., sluicing; three men employed. Bennet and Rowlands, driving and blocking out; two men employed. White and party, driving and blocking out; three men employed. Shrimpton and party, driving and blocking out; two men employed. Fortune Bros., driving and blocking out; two men employed. Homer and Hislop, driving and blocking out; two men employed.

Falls Creek.

Ralston and party, opening out sluicing claim; two men employed. Lennon, sluicing; one man employed. T. Fitzgerald, driving and blocking out; one man employed. A party of fifteen Chinese, bringing in water-race from tributaries of Tuanoa Creek.

Kenny's Creek.

J. Forbes, sluicing; two men employed. J. Arthur, jun., sluicing; two men employed.

Pahia.

O'Connor, driving and blocking out; two men employed. Decosta Bros., driving and blocking out; two men employed. Watson Bros., driving and blocking out; two men employed.

Beach Claims.

Mouth of Sandy Creek Sludge-channel.—Crawford; three men employed. Wilson and Fretwell; two men employed. Williams; one man employed. Murdoch, one man employed.

Mouth of Tuanoa Sludge-channel.—E. Fortune; two men employed. Hall and party; one man employed. Hutton and Yates; two men employed. A. Pearson; one man employed.

Waiau River.

Only two men now engaged sluicing at Papatotara.

The Belmont Dredge, which had been navigated down stream a distance of fifty miles, lies wrecked in the lagoon near the mouth of the river; a flood had drifted shingle into the paddock, and when the waters subsided the dredge's back became broken.

PRESERVATION INLET AND SOUTH-WEST COAST OF OTAGO.

Sealer's No. 2.—Treseder and Goodger, who are engaged in hydraulic sluicing, have brought in a head-race for a distance of three-quarters of a mile to work ground on McNamara Creek.

Coal Island.—Only two men (Campbell and Powell) are now engaged in ground-sluicing. Cullen and Clark, two old miners, are doing a little prospecting at Moonlight.

Southport.—Johnston and McLaren are fossicking in the creek.

Milford Sound (Greenstone Beach, Anita Bay).—A party of five men, with five months' provisions, were landed from the "Hinemoa." Some of the men are experienced miners, and it is understood that they are acting on behalf of Messrs. Bertram and Co., a Dunedin syndicate formed for the purpose of prospecting for a formation of greenstone (nephrite) which is believed to occur at an altitude of 1,600 ft. above sea-level, on the north-western terminal slope of Mitre Peak. The face of the mountain is very steep, and a large landslip which occurred in bygone days brought down fragments and boulders of greenstone, pieces of which have been picked up on the beach at low water for many years past.

Madagascar Beach lies north of the entrance to Milford Sound. Rough gold was found on the beach, which has been worked intermittently on a small scale. A Dunedin party, having acquired an area

on the beach, intends bringing in a head-race from the Wolf River for the purpose of ground-sluicing. Part of a small sluicing plant is at present lying on the beach unused.

Martin's Bay.—McKenzie Bros. combine cattle-raising and prospecting.

Hollyford River.—George and Campbell are said to be prospecting on the river and along the sea-beaches to the northward.

Big Bay.—Harris and party (five men) were landed from the "Hinemoa" on her previous trip, a Dutchman called Oscar acting as guide. It is stated that, after giving the alleged auriferous ground a good trial, Harris and his mates gave Oscar twenty-four hours to clear out, which he accordingly did. Two of the party reached Glenorchy overland, while the others determined to make for Preservation Inlet in the boat. After encountering many hardships, they reached Moonlight, on Coal Island, where their boat was wrecked. The men received hospitable treatment from Messrs. Cullen and Clark, the miners residing there.

GOLD-DREDGING.

Summary of Dredges in Southern Mining District.

	At 31st December, 1903.
Working—	
In Otago	112
In Southland	43
	155
Building—	
In Otago	1
In Southland	6
	7
Standing—	
In Otago	11
In Southland	1
	12
Removing—	
In Otago	15
In Southland	3
	18
Dismantled—	
In Otago	5
In Southland	3
	8
Total	200
Decrease of working dredges—	
Otago	10
Increase of working dredges—	
Southland	14

At the end of December, 1902, the total number of dredges in Otago and Southland was 211. At the end of December, 1903, this number had dropped to 200. During the year there was a decrease of ten working dredges in Otago, and an increase of fourteen in Southland. The total number of dredges in Otago was lessened by twenty-one. Of this number, ten went to the Southland District, six to Victoria, and two to the West Coast of New Zealand.

A number of registered companies were liquidated during the year, and in some cases the dredges were started again to work by new companies, while in other cases, the dredges were sold for removal to other claims.

On account of the number of dredges for sale, the building of new dredges in the Otago and Southland Districts was almost at a standstill.

A regrettable event was the wreck of the Belmont Dredge, Waiau River. The owner, Mr. Francis Jack, of Winton, had caused the dredge to be brought down the river a distance of forty miles to a claim on the lagoon at Waiau Mouth. The dredge reached the claim, but unfortunately became stranded. The machinery was recovered.

Payne and Peck's centrifugal elevator continues to give satisfaction, and is being installed on many dredges.

O'Brien's application of hydraulic power to dredges has proved successful in districts where water is available under sufficient pressure.

Johnson's submerged-jet principle of dredging, or rather elevating, has been tried and proved capable of practical results.

McGeorge's silt-distributor for land reclamation: Much comment having been raised regarding the destruction of agricultural land in the process of dredging, an arrangement of undercurrents and silt-chutes has been installed on McGeorge's Freehold, whereby the silt is carried out and deposited on the rough tailings. Growth of grass, oats, and trees, has been tried on the tailings with apparent success. When it is considered that much of the land suitable for dredging is low-lying and swampy, as in Waimumu, Waipori, Charlton, and parts of Waikaka, and Waikaia districts, it will be recognised that it is advantageous to have this land turned over and raised in height.

GOLD-DREDGING.

WORKING DREDGES INSPECTED.

[NOTE.—The owners of all dredges having an asterisk (*) in front of their names have been served with notices that the rivers on which the dredges were working were deep and swift-flowing within the meaning of the Act, and that clause 2 of Regulation 83, "The Mining Act, 1898," applied thereto.]

Name of Dredge and Locality.	Owners.	Dredgemaster.	Remarks.	Dates of Visits.
OTAGO.				
CLUTHA RIVER.				
*New Paul's Beach, below Beaumont	New Paul's Beach Gold-dredging Company (A. McLean, Lawrence, secretary)	W. Nesbit ..	Dredge and life-saving appliances in fair order	5/5/03
		John Donaldson ..	Fly-wheel guard broken down; four lifebelts require renewal	7/9/03
*New Golden Gravel, Beaumont	New Golden Gravel Gold-dredging Company (R. A. Mathewson, Dunedin, secretary)	T. Barnes ..	Dredge and life-saving appliances in good order	28/2/03
			Dredge idle; ladder silted up	8/9/03
*Champion, Beaumont ..	Champion Gold-dredging Company (R. Pilling, jun., Lawrence, secretary)	J. Herbert ..	Bar required across coal-door; life-saving appliances in good order	28/2/03
		L. Johnston ..	Dredge and life-saving appliances in fair order	6/5/03
			Dredge idle; company in liquidation	8/9/03
*Otago No. 2, below Island Block	Otago Gold-dredging Company (A. G. Fenwick, Dunedin, secretary)	G. Bennet ..	Dredge and life-saving appliances in good order	27/2/03
			" "	8/9/03
Island Block, Island Block ..	Island Block Gold-dredging Company, (James Brown, Dunedin, secretary)	A. C. Perkins ..	Fencing required at stern and around gold-saving tables; coupling on elevator shafting should be guarded	27/2/03
			Forward gangway in disrepair; fly-wheel to be guarded; dredge undergoing repairs ..	8/9/03
*New Britannia, Island Block ..	New Britannia Gold-dredging Company (J. A. Hopcraft, Dunedin, secretary)	A. Gibson ..	Dredge standing	6/5/03
			Dismantled; pontoons standing; machinery removed to Victoria	8/9/03
*Golden Run, Miller's Flat ..	Golden Run Gold dredging Company (J. Burton, Roxburgh, secretary)	H. Coutts.. ..	New set of regulations required; dredge and life-saving appliances in good order	26/2/03
			Dredge and life-saving appliances in good order	9/9/03
*Pride of Clutha, No. 2, Miller's Flat	Pringle and party	J. Tough ..	Dredge and life-saving appliances in first-class order	27/2/03
			Dredge undergoing repairs	8/9/03
			Andrew Taylor, winchman, drowned on 3rd November, 1903—outcome of boating accident: For particulars see list of dredging accidents appended.	
*Pride of Clutha No. 1, Miller's Flat	Pringle and party	John Pringle ..	Dredge standing	27/2/03
			"	8/9/03
*Golden Gate, Miller's Flat ..	Golden Gate Gold-dredging Company (J. Burton, Roxburgh, Secretary)	D. Ballantyne ..	Dredge and life-saving appliances in fair order; elevator-pinion to be guarded	6/5/03
			Platform required aft to attend to stone-chute; dredgemaster informed me that the machinery was oiled while in motion. Wrote Mr Ballantyne under date 29th September, 1903, to discontinue the practice	9/9/03
*Otago No. 1, Miller's Flat ..	Otago Gold-dredging Company (A. G. Fenwick, Dunedin, secretary)	R. Williamson ..	Dredge and life-saving appliances in good order; guard-rail to be erected round the tables ..	6/5/03
		C. Monson ..	Dredge and life-saving appliances in good order	9/9/03
*Golden Treasure, Miller's Flat	Golden Treasure Gold-dredging Company (J. Burton, Roxburgh, secretary)	J. T. Cornish ..	New copy of regulations required; dredge and life-saving appliances in good order; regulations posted	26/2/03
			Regulations posted; dredge and life-saving appliances in good order	9/9/03
*Majestic, Ettrick	Majestic Gold-dredging Company (R. Pilling, jun., Lawrence, secretary)	W. Williamson ..	Guard-rail required on main engine, as passage is narrow; otherwise dredge and life-saving appliances in good order	26/2/03
		J. Herbert ..	All the new elevator driving-gear to be guarded	7/5/03
			Guards still required about screen and elevator driving-gear; light lines and boathooks required	9/9/03
*Golden Bed, Ettrick.. ..	Golden Bed Gold-dredging Company (E. Trythall, Dunedin, secretary)	A. E. Maitland ..	Dredge and life-saving appliances in good order	26/2/03
			" "	10/9/03
*Ettrick, Ettrick	Ettrick Gold Steam Dredging Company (J. Burton, Roxburgh, secretary)	T. Thompson ..	Dredge undergoing repairs; life-saving appliances in good order	25/2/03
			Guard-coupling required on screen driving-shaft; otherwise dredge and life-saving appliances in good order	10/9/03

WORKING DREDGES INSPECTED—*continued.*

Name of Dredge and Locality.	Owners.	Dredgemaster.	Remarks.	Dates of Visits.
CLUTHA RIVER—*continued.*				
*Gold King, Dumbarton Rock	J. Sparrow and Sons	J. McLean	Elevator-driving pinions, and fly-wheel of main engine to be guarded; railing on bows to be erected	7/5/03
			Fly-wheel not yet guarded; approach required to elevator	10/9/03
*Main Lead, Hercules, Dumbarton Rock	Fourteen-mile Beach Electric Gold-dredging Company (D. Crawford, secretary, Dunedin)		Dismantling for re-erection on Fourteen-mile Beach Claim	26/2/03
*Endeavour, Dumbarton Rock	Endeavour Gold-dredging Company (G. M. McLean, secretary, Dunedin)	F. C. McClure	Dredge and life-saving appliances in good order	7/5/03
			Dredge idle	10/9/03
*Roxburgh Jubilee, Roxburgh	New Roxburgh Jubilee Gold-dredging Company (J. Davie, secretary, Dunedin)	E. Butler	Dredge and life-saving appliances in good order	25/2/03
			Samuel McAuley, fireman, lost his foot in the screen-roller on the 9th July, 1903, and succumbed to the injury on 17th July, 1903; approach required to elevator and suitable fencing	11/9/03
*New Teviot, Roxburgh	New Teviot Gold-dredging Company	D. A. Mitchell	Bar across coal-door required; new copy of regulations required; one buoy to be re-covered: Visited dredge in connection with accident to F. Cameron on the 5th February—fractured leg while crossing bucket-belt in motion	25/2/03
		W. H. Brice	Elevator-handrails required	11/9/03
*Lady Roxburgh, Roxburgh	Lady Roxburgh Gold-dredging Company (P. H. Power, secretary, Dunedin)	A. P. Bremner	Dredge repairing; life-saving appliances in good order	25/2/03
			Fence required at stern; otherwise dredge and life-saving appliances in fair order	12/9/03
*Molyneux Kohinoor, Coal Creek Flat	Molyneux Kohinoor Gold-dredging Company (H. Shrimpton, secretary, Dunedin)	A. Rennie	Fly-wheel and rope-pulley to be guarded; bar required across coal-door; forward part of well-hole to be fenced; main friction to be guarded	11/5/03
			Dredge and life-saving appliances in fair order	12/9/03
*Coal Creek Flat, Coal Creek Flat	Coal Creek Flat Gold-dredging Company (A. J. C. Brown, secretary, Dunedin)	S. Coard	Guard-rails not in place on bows; otherwise dredge and life-saving appliances in good order	24/2/03
			Dredge idle; shifting to Ardmore	12/9/03
*Melba, Coal Creek Flat	Melba Gold-dredging Company (J. H. Thomson, secretary, Dunedin)	M. Harlivick	Undergoing extensive alterations and repairs	11/5/03
		G. McGregor	Dredge closed down	12/9/03
Coal Creek to Alexandra Gorge.			Dredge being removed to Otago Claim, Miller's Flat	9/12/03
*New Long Valley	New Long Valley Gold-dredging Company (A. McLean, secretary, Lawrence)	C. Olsen	Forward platform with strong bearers to be put on for convenience in handling bottom-tumbler; otherwise dredge and life-saving appliances in fair order	11/5/03
			Dredge closed down	12/9/03
		Caretaker	Dredge being removed to Golden Treasure Claim, Miller's Flat	18/12/03
*Fourteen-mile Beach No. 1	Fourteen-mile Beach Electric Dredging Company (D. Crawford, secretary, Dunedin)	G. P. Blue	Dredge standing	12/5/03
			,,	15/9/03
*Fourteen-mile Beach No. 2	Ditto	,,	New dredge not yet properly equipped with life-saving appliances, nor machinery efficiently guarded	15/9/03
*Golden River	Golden River Gold-dredging Company (R. T. Wheeler, jun., secretary, Dunedin)	J. Sanders	Dredge undergoing repairs; life-saving appliances in fair order	12/5/03
			Dredge and life-saving appliances in good order	15/9/03
*Molyneux Falls	Molyneux Falls Gold-dredging Company (H. F. M. Mercer, secretary, Dunedin)	— Wilson	Dredge idle pending installation of a 25-horse power oil-engine	12/5/03
		J. Thompson	Dredge had recently undergone alterations; screen rollers and belts to be guarded; pump-engine and main fly-wheel to be fenced off; lifebuoy and light line to be placed aft	15/9/03
*New River Molyneux	New River Molyneux Gold-dredging Company (J. B. Brugh, secretary, Dunedin)	G. G. Watts, (caretaker)	Dredge undergoing alterations; only one boat at the dredge	3/4/03
			Dredge idle; still only one boat at the dredge	21/9/03
*Davis Bend	Davis Bend Gold-dredging Company	G. McDonald	New copy of regulations required; the dredgemaster has ordered new sets of buoys, lifebelts, and boathooks	3/4/03
		J. Parsons	Dredge and life-saving appliances in fair order	21/9/03

WORKING DREDGES INSPECTED—*continued.*

Name of Dredge and Locality.	Owners.	Dredgemaster.	Remarks.	Dates of Visits.
CLUTHA RIVER—*continued.*				
Coal Creek to Alexandra Gorge—ctd.				
*New Bendigo	New Bendigo Gold-dredging Company	W. Woodhouse ..	Dredge being shifted to new claim; life-saving appliances in fair order	3/4/03
			Dredge idle owing to high river	13/5/03
		P. McVicar ..	Main-engine fly-wheel to be guarded,and gangway hand-rail required; new copy of regulations to be posted up	21/9/03
*New First Chance	New First Chance Gold-dredging Company	S. Hoy	Ladder has been lengthened 9 ft., and pontoons lengthened to carry extra weight; suitable 12 in. by 12 in. blue-gum ladder-bearer ordered; dredge and life-saving appliances in good order	19/2/08
			Dredge being fitted with false bows; life-saving appliances in fair order	3/4/03
			Dredge and life-saving appliances in first-class order	13/5/03
			,, ,, ...	21/9/03
*Sailor's Bend	Sailor's Bend Gold-dredging Company	J. Dewar.. ..	Engaged lowering pivot-shaft of ladder; suitable 12 in, by 12 in. blue-gum ladder-bearer ordered; dredge and life-saving appliances in first-class order	19/2/03
			Dredge and life-saving appliances in good order	3/4/03
			,, ,, ...	13/5/03
			,, ,, ...	21/9/03
*Manuherikia	Manuherikia Gold-dredging Company	L. Anderson ..	Dredge has been fitted with false bows to carry weight of extended ladder; life-saving appliances in good order ..	19/2/03
			Dredge and life-saving appliances in good order; new copy of regulations to be posted up ..	21/9/03
*Moa No. 1	Clyde Gold-dredging Company ..	W. Nicholson ..	Securely moored on the Manuherikia River	19/2/03
			Being dismantled	21/9/03
*Moa No. 2	,, ..	,, ..	Guard-rail on fly-wheel of main engine to be replaced; otherwise dredge and life-saving appliances in good order	19/2/03
			Dredge repairing; life-saving appliances in good order	13/8/03
Alexandra.			,, ,, ...	21/2/03
*Alexandra Lead	Alexandra Lead Gold-dredging Company	Robert Ross ..	Sleeve required on projecting end of main engine-shaft; well-hole fencing forward not up; after well-hole uncovered	13/8/03
*Molyneux Hydraulic ..	Molyneux Hydraulic Gold-dredging Company	C. Simonsen ..	Well-hole railing down; guard on screen driving-gear not sufficient	21/2/03
			Dredge and life-saving appliances in good order	13/8/03
*Alexandra Eureka	Alexandra Eureka Gold-dredging Company	N. Bradley ..	,, ,, ...	19/2/03
		Charles B. Curno ..	,, ,, ...	15/8/03
*New Golden Beach	New Golden Beach Gold-dredging Company	,, ..	Dredge idle	19/2/03
			Dredge undergoing extensive alterations	15/5/03
			,, ,, ...	15/8/03
		T. Bringam ..	Dredge still undergoing extensive alterations	16/12/03
*Ngapara No. 1	Ngapara Gold-dredging Company ..	M. G. Scott ..	Dredge and life-saving appliances in good order	20/2/03
			,, ,, ...	17/9/03
*Ngapara Extended	Ngapara Extended Gold-dredging Company	G. McDonald ..	,, ,, ...	20/2/03
		C. Allen ..	,, ,, ...	13/8/03
*Enterprise No. 1	Enterprise Gold-dredging Company	S. J. Luke ..	New copy of regulations required; two lifebelts to be renewed	20/2/03
			Rails not in position at stern, round well-holes and across tables..	17/9/03
*Enterprise No. 2	,,	G. R. McGregor ..	Dredge and life-saving appliances in good order	20/2/03
			,, ,, ...	17/9/03
Earnscleugh No. 3	Earnscleugh Gold-dredging Company	C. Weaver ..	Life-saving appliances not yet complete	6/3/03
			Several guards required about the elevator, screen, and silt-elevator driving-gear; also guard-rails required about all the top gear; these requirements were pointed out	22/9/03
*Earnscleugh No. 1	,,	J. Fouhy.. ..	Well-hole gangway and fencing required; regulations defaced	15/8/03
*Earnscleugh No. 2	,,	,, ...	Dredge and life-saving appliances in good order	15/8/03

WORKING DREDGES INSPECTED—*continued.*

Name of Dredge and Locality.	Owners.	Dredgemaster.	Remarks.	Dates of Visits.
CLUTHA RIVER—*continued.*				
Alexandra—continued.				
*Chicago	Chicago Gold-dredging Company	William Poppelwell	Guard-rails required across tables, and on forward well-hole	17/9/03
*Sandy Point (Glasgow dredges)	Sandy Point Gold-dredging Company	A. Steel	Dredge repairing; life-saving appliances in fair order	15/8/03
*Perseverance No. 1	Perseverance Gold-dredging Company	S. Cameron	Large boat not thoroughly equipped; hand-rail required for well-hole gangway	17/2/03
			Well-hole gangway and hand-rails required; three boathooks missing	15/8/03
*Perseverance No. 2	Ditto	„	Dredge undergoing repairs	17/2/03
			Repairing	15/8/03
*Dunstan Lead	Dunstan Lead Gold-dredging Company	D. Bringans	Dredge and life-saving appliances in first-class order	17/2/03
			„ „	15/8/03
Below Clyde.				
*Matau	Matau Gold-dredging Company	H. P. Sanders	Dredge and life-saving appliances in good order	17/2/03
			„ „	15/8/03
*Unity	Unity Gold-dredging Company	T. Barry	Cover required for screen driving-gear; otherwise dredge and life-saving appliances in good order	17/2/03
			Visited dredge in connection with fatal accident to William H. Hughes, engineer, on the 27th February, particulars of which appear on list appended	5/3/03
			Set-screw on screen roller-shaft to be guarded; otherwise dredge and life-saving appliances in good order	23/9/03
At Clyde.				
*New Vincent	New Vincent Gold-dredging Company	W. Kane (caretaker)	Dredge undergoing extensive overhaul	5/3/03
			Dredge idle	23/9/03
Clyde to Cromwell Gorge.				
*New Dunstan	New Dunstan Gold-dredging Company	„	„	18/2/03
*Davis Bend No. 2 (late New Dunstan)	Davis Bend Gold-dredging Company	J. R. Baker	„	17/5/03
		Thomas Hogg	Dredge and life-saving appliances in good order	23/9/03
*Leaning Rock	New Bendigo Gold-dredging Company	L. Anderson	Lately Leaning Rock dredge; being removed to new Bendigo claim, below Alexandra	16/2/03
*Monte Christo	Monte Christo Gold-dredging Company	T. Keen	Dredge and life-saving appliances in good order	16/2/03
		J. Hewitt	Fly-wheel guard not in position; platform required about top gear; second boat not equipped; buoy on bows too small	23/9/03
*New Halfway House	New Halfway House Gold-dredging Company	Caretaker	Dredge and life-saving appliances in good order	16/2/03
		J. Sawle	„ „	24/9/03
*Kelly and Casey	Kelly and Casey Gold-dredging Company	T. Hogg	Dredge shifting up-stream; recommended that extra precautions be taken before attempting to pull through the rip; two buoys falling to pieces. This dredge has since been sold to Alexandra Eureka Company, and is now known as Alexandra Eureka No. 2 dredge	16/2/03
*Great Central	Lately Great Central Gold-dredging Company	Caretaker	Machinery removed to Waikaia; pontoons high and dry; these pontoons have since been pulled to pieces	16/2/03
*Alpine Consols	Alpine Consols Gold-dredging Company	R. B. Denniston	Dredge and life-saving appliances in good order	24/9/03
*Riley's Beach	Riley's Beach Gold-dredging Company	J. Watt	„ „	16/2/03
		M. Murray	Set-screw on tension-pulley not guarded; stern railing down; three lifebelts required	24/9/03
*Alpine No. 2	Alpine No. 2 Gold-dredging Company	— Johnston	Dredge idle; awaiting favourable fall of river	24/9/03
*Hartley and Riley	Hartley and Riley Gold-dredging Company	G. McLay	Dredge and life-saving appliances in first-class order	25/5/03
			50 ft. of heaving-line required for stern	24/9/03
*Central Electric	Central Electric Gold-dredging Company	K. M. Woods	Dredge idle; this dredge has been acquired by the Sunshine Gold-dredging Company, Lowburn	25/5/03

WORKING DREDGES INSPECTED—*continued.*

Name of Dredge and Locality.	Owners.	Dredgemaster.	Remarks.	Dates of Visits.
CLUTHA RIVER—*continued.*				
Clyde to Cromwell Gorge—contd.				
*Junction Electric No. 2 ..	Junction Electric Gold-dredging Company	A. Ross	New copy of regulations required; conferred with the dredgemaster *re* freeboard which is deficient	14/2/03
			Dredge and life-saving appliances in good order	25/5/03
			„ „	14/12/03
Above Cromwell.				
*New Royal Maori	New Royal Maori Gold-dredging Company	R. A. Denniston ..	Dredge and life-saving appliances in good order; this dredge has since been acquired by Revival Gold-dredging Company, Lowburn	13/2/03
			Now shifting and re-erecting the Upper Magnetic dredge on claim	25/9/03
*Point d'Or	Point d'or Gold-dredging Company	M. Murray ..	Dredge and life-saving appliances in good order	13/2/03
			Inspected the pontoons and found them in thorough good order; parts of the red-pine gantry and tumbler-framing showing signs of decay	14/2/03
Lowburn.			Dredge standing; pontoons fairly dry	25/9/03
*Rise and Shine	Rise and Shine Gold-dredging Company	J. C. Ray ..	Dredge and life-saving appliances in good order	14/2/03
			„ „	25/9/03
*Rise and Shine No. 2 ..	Ditto	..	Pontoons building	14/2/03
		Thomas Keen ..	Erecting machinery	25/9/03
			Dredge approaching completion	14/12/03
*Rising Sun	Rising Sun Gold-dredging Company	..	Erecting pontoons	14/2/03
		W. Kane.. ..	Dredge nearly ready for starting	14/8/03
			New dredge not yet equipped with life-saving appliances, nor machinery efficiently guarded ..	25/9/03
			Dredge and life-saving appliances in fair order	2/10/03
*Revival	Revival Gold-dredging Company ..	F. M. Kitto ..	Shifting late New Royal Maori dredge a few miles up the Clutha River; life-saving appliances in good order	25/9/03
			Dredge and life-saving appliances in good order	14/12/03
*Sunshine	Sunshine Gold-dredging Company..	D. Murray ..	Shifting Central Electric dredge up to work freehold land on Clutha River; life-saving appliances in good order	25/9/03
Luggate.			Bows to be fenced; forward gangway required; set-screws on screen driving-gear to be guarded	14/12/03
*Golden Chain	Golden Chain Gold-dredging Company	..	Dismantling this dredge for removal	1/10/03
Below Albert Town.				
*Upper Clutha	Knewstubb Bros.	..	Lying idle at Luggate Ferry	21/5/03
			„ „	1/10/03
Albert Town.				
*Prince Albert	Prince Albert Gold-dredging Company	G. Coup	Dredge undergoing repairs; life-saving appliances in good order	1/10/03
KAWARAU RIVER.				
Above Cromwell.				
*Junction Electric No. 1 ..	Junction Electric Gold-dredging Company	..	Pontoons launched	13/2/03
		G. S. Morris ..	Hand-rails required on well-hole gangway; three boathooks required; also winch-engines and all set-screws to be guarded	18/5/03
			Dredge and life-saving appliances in good order	26/5/03
			To guard more efficiently the screen gear and rollers; and to make suitable approach to stone-chute	2/10/03
*Cromwell No. 1	Cromwell Gold-dredging Company..	N. P. Kloogh ..	Dredge and life-saving appliances in good order; new set of regulations required	13/2/03
			Set-screw on pump to be guarded; also set-screws and screen bevel gear to be guarded ..	2/10/03
*Cromwell No. 2	„ ..	F. Woodhouse ..	Three buoys falling to pieces; heaving-lines required; new copy of regulations required ..	13/2/03
			Dredge and life-saving appliances in good order	18/5/03
			„ „	2/10/03

WORKING DREDGES INSPECTED—*continued.*

Name of Dredge and Locality.	Owners.	Dredgemaster.	Remarks.	Dates of Visits.
KAWARAU RIVER—*continued.*				
Above Cromwell—continued.				
*Lady Ranfurly	Electric Gold-dredging Company ..	G. C. Troy ..	Dredge and life-saving appliances in good order	13/2/03
			Rail required across open doorway, and also open space aft; light lines required	3/10/03
*Electric No. 2 (magnetic) ..	,, ..	A. Hedley ..	Two of the buoys falling to pieces; dredge undergoing extensive overhaul	13/2/03
			Set-screw and screen driving-shaft to be covered	3/10/03
*Voltaic	Voltaic Gold-dredging Company ..	Caretaker ..	Dredge to be shifted to a claim on Clutha River. (Since acquired by New Royal Maori Company, and shifting to Clutha River)	26/5/03
*Grand Junction No. 2 ..	Grand Junction Gold-dredging Company	W. Woods ..	Closed down; company in liquidation	..
		A. Young ..	,, ,, ...	5/10/03
*Meg and Annie	Meg and Annie Gold-dredging Company	E. A. McDonald ..	Dredge idle	5/10/03
*Grand Junction No. 1 ..	Grand Junction Gold-dredging Company	A. Young ..	Dredge and life-saving appliances in good order	12/2/03
			Dredge idle; company in liquidation	5/10/03
Gibbston.				
*Golden Molyneux	Golden Molyneux Gold-dredging Company	Caretaker ..	Machinery going to west coast of New Zealand; dredge partially dismantled	12/2/03
*Kawarau Consolidated ..	Kawarau Consolidated Gold-dredging Company	,, ..	Pontoons moored in safe position	12/2/03
			,, ,, ...	5/10/03
*United Morven	United Morven Gold-dredging Company	..	Machinery being taken down for removal to Victoria; pontoons going to Waikaia	11/2/03
*Junction Waikaka (late New Kawarau Bridge)	Junction Waikaka Gold-dredging Company	Caretaker ..	One boat submerged and other in disrepair; one lifebuoy required and one to be recovered; light lines and boathooks required, and guard to screen driving-gear	12/2/03
		Thomas Hoskins ..	Dredge and life-saving appliances in fair order. (Since dismantled and machinery removed to Waikaka)	27/5/03
			Pontoons lying unattended; caretaker appointed this day	7/10/03
*Gibbston	Gibbston Gold-dredging Company ..	Caretaker ..	To fence stern of both pontoons, and guard elevator driving-gear; fence winch-engines; regulations not yet posted on the dredge; well-hole gangway required; condemned boat not yet replaced by a suitable one	11/2/03
*New Gibbston	New Gibbston Gold-dredging Company	J. S. Ritchie ..	The above requirements have not yet been carried out; but the dredgemaster will attend to them before the dredge resumes work	27/5/03
			Dredge standing	7/10/03
SHOTOVER RIVER.				
*Prince Arthur	Prince Arthur Gold-dredging Company	J. F. Kitto ..	Dredge just raised after being submerged for a few months	8/12/03
*Maori Point	Maori Point Gold-dredging Company	J. Hoskins ..	Dredge idle on account of high river	8/12/03
CARDRONA VALLEY.				
Lone Star	Lone Star Gold-dredging Company	C. Melton ..	Well-hole gangway required; also heaving-lines	28/9/03
La Franchi's		A. La Franchi ..	Well-hole gangway required; otherwise dredge and life-saving appliances in good order ..	28/9/03
Sunbeam	Sasse and party	..	Re-erecting Rolling Stone machinery on Lady Cardrona pontoons; dredge to be fitted with O'Brien's patent hydraulic arrangements	28/9/03
NEVIS RIVER.				
Nevis.				
Nevis Crossing	Nevis Crossing Gold-dredging Company	C. Macdonald ..	New dredge not yet fully equipped with life-saving appliances, nor machinery aft guarded ..	11/12/03
		— Martin ..	Several matters still require attention	13/12/03
Crewe	Crewe Gold-dredging Company ..	W. Weir ..	Bows and stern to be fenced; elevator and screen driving-gear to be covered; all set screws to be guarded; well-hole gangway required	11/12/03
			Dredge and life-saving appliances in good order	13/12/03

WORKING DREDGES INSPECTED—*continued.*

Name of Dredge and Locality.	Owners.	Dredgemaster.	Remarks.	Dates of Visits.
NEVIS RIVER—*continued.*				
Nevis—continued.				
New Era	New Era Gold-dredging Company	T. Omond	Forward gangway and boat required	11/12/03
Ngapara No. 2	Ngapara Gold-dredging Company	J. McLean	One buoy missing; boat required; gangway required on bows, and bows to be fenced	11/12/03
Ngapara No. 3	Ngapara No. 3 Gold-dredging Company	„	Boat not equipped; two boathooks missing; dredge-bows to be fenced; forward gangway; also light lines required	11/12/03
			Dredge and life-saving appliances not yet in efficient state	12/12/03
Upper Nevis	Upper Nevis Gold-dredging Company	„	Dredge idle	12/12/03
MANUHERIKIA RIVER.				
Chatto Creek	Chatto Creek Gold-dredging Syndicate	B. Davis	Stern railing down; forward and well-hole gangways required	18/2/03
			Dredge standing	19/9/03
Morning Star	Morning Star Gold-dredging Syndicate	J. Timmings	Dredge undergoing repairs	14/5/03
		T. Sanders	Dredge and life-saving appliances in good order	19/9/03
Olrig	Olrig Gold-dredging Company	E. A. Johnston	Forward gangway required; otherwise dredge and life-saving appliances in good order	18/2/03
			Dredge and life-saving appliances in good order; new copy of regulations to be posted	19/9/03
Coronation	Coronation Gold-dredging Company	..	Dredge ready to start work; fixing machinery-guards	23/2/03
			Dredge idle; company in liquidation	15/8/03
FRASER RIVER.				
Loch Lomond	Loch Lomond Gold-dredging Company	T. Sanders	New dredge not yet equipped with life-saving appliances	15/12/03
IDA VALLEY.				
Cairntrodlie, Poolburn	Cairntrodlie Gold-dredging Company	H. Mercer	Not visited.	
NASEBY.				
Roberts' Naumai, Upper Kyeburn	Roberts' Naumai Gold-dredging Company	..	Dredge idle greater part of year.	
TUAPEKA.				
Taniwha	Taniwha Gold-dredging Company	A. N. Wakefield	Dredge and life-saving appliances in good order	16/6/03
Lawrence, Tuapeka Flat	Lawrence Gold-dredging Company	S. McStay	Gangway required on bows; otherwise dredge and life-saving appliances in good order	16/6/03
Reliance, Tuapeka Flat	Reliance Gold-dredging Company	J. Hughes	Dredge and life-saving appliances in good order	16/6/03
Tuapeka, Tuapeka	Tuapeka Gold-dredging Company	G. Montgomery	„ „	17/6/03
Gabriel, Tuapeka Flat	Gabriel Gold-dredging Company	P. J. Uren	„ „	16/6/03
Happy Valley, Wetherstone's	Happy Valley Gold-dredging Company	W. J. Noble	Stern railing down; otherwise dredge and life-saving appliances in good order	18/6/03
Havelock, Waitahuna	Havelock Gold-dredging Company	W. Rowe	Dredge and life-saving appliances in good order	18/6/03
Gordon, Waitahuna	Gordon Gold-dredging Company	T. Thompson	„ „	18/6/03
Manuka, Waitahuna	Manuka Gold-dredging Company	— Fowell	Hand-rails not erected on bows and stern; two lifebuoys require to be re-covered; friction not guarded; regulations defaced	18/6/03
Waitahuna Gully, Waitahuna	Waitahuna Gully Gold-dredging Company	W. Cummings	Life-lines and boathooks required; fly-wheel on main engine to be guarded; set-screws on winch-shaft to be cut off; boat not equipped	18/6/03
GLENORE.				
Gold Bank, Glenore	Gold Bank Gold-dredging Company	A. Thomas	Fence bows and well-hole; well-hole gangway required	27/8/03
Stirling, Glenore	Stirling Gold-dredging Company	J. Nelson	Dredge and life-saving appliances in fair order	27/8/03
WAIPORI.				
Quilter and party	Quilter and party	W. Carr	Dredge and life-saving appliances in good order	29/4/03
			„ „	17/11/03

WORKING DREDGES INSPECTED—*continued.*

Name of Dredge and Locality.	Owners.	Dredgemaster.	Remarks.	Dates of Visits.
WAIPORI—*continued.*				
Johnson Submerged Jet ..	Bakery Flat Sluicing Company ..	J. F. Johnson ..	New dredge starting work; not yet fully equipped with life-saving appliances	17/11/03
Upper Waipori	Upper Waipori Gold-dredging Company	C. Haggitt ..	Dredge and life-saving appliances in good order	27/4/03
		„ „	.. ..	17/11/03
Jutland Hydraulic	Jutland Hydraulic Gold-dredging Company	T. Jefferson ..	Dredge and life-saving appliances in first-class order	27/4/03
		„ „	.. ..	17/11/03
Waipori Consolidated ..	Waipori Consolidated Gold-dredging Company	C. F. Truesdale ..	Forward gangway to be repaired	29/4/03
Perseverance	McNeil and party	T. Aitken	Dredge and life-saving appliances in good order	29/4/03
		„ „	.. ..	17/11/03
Oceanic	Oceanic Steam Gold-dredging Company	..	Erecting machinery	29/4/03
		A. McIvor ..	New dredge. Not yet fully equipped with life-saving appliances; machinery inefficiently guarded	17/11/03
Success	Success Gold-dredging Company ..	W. Hanley ..	Dredge and life-saving appliances in good order	29/4/03
Empire No. 1	Empire Gold-dredging Company ..	G. Larking ..	Sleeve required on engine-shaft; fly-wheel to be guarded; as also winch-pinions, and all set-screws; railing on bows to be renewed	28/4/03
			Dredge and life-saving appliances not in good order	19/12/03
Golden Shore	Golden Shore Gold-dredging Company	R. Allen	Dredge sunk; preparations being made to refloat her	28/4/03
			Dredge idle	17/11/03
			„	19/12/03
Empire No. 2	Empire Gold-dredging Company ..	G. Larking ..	Dredge undergoing extensive overhaul	28/4/03
			Dredge idle	19/12/03
Lower Enfield	Lower Enfield Gold-dredging Company	W. O'Brien ..	Dredge and life-saving appliances in fair order	28/4/03
		J. Nelson	Dredge and life-saving appliances not in good order	19/12/03
Enfield	Enfield Gold-dredging Company ..	C. Robinson ..	Main fly-wheel and belt-pulley on main engine to be more efficiently guarded, and passage-way made through the belting; well-hole gangway and platform about friction-gear required	28/4/03
SHAG RIVER.			Dredge and life-saving appliances in fair order	19/12/03
Inch Valley, Inch Valley ..	Inch Valley Gold-dredging Company	J. Black	Dredge and life-saving appliances in good order; new copy of regulations required	14/3/03
			Dredge and life-saving appliances in fair order; screen level pinion to be guarded	24/7/03
Inchdale, Inch Valley ..	Inchdale Gold-dredging Company ..	P. Brennan ..	Dredge and life-saving appliances in good order	14/3/03
			„ „	24/7/03
POMAHAKA RIVER.				
Greenvale, Scrubby Flat ..	Greenvale Gold-dredging Company	..	Dredge idle	..
Ardmore, Kelso	Private syndicate	..	Dredge dismantled; a larger dredge is to be procured	..
SOUTHLAND.				
MATAURA RIVER.				
*Graham's Syndicate ..	Graham's Mataura Gold-dredging Company	William Gibbs ..	Erecting machinery	23/4/03
			New dredge not fully equipped with life-saving appliances, nor machinery efficiently guarded	2/7/03
			Two buoys and two belts missing; the second boat was condemned as being unsuitable for river-work, and the secretary of the syndicate was notified on the 16th November to provide suitable boat	2/11/03
			New boat not yet provided; dredge working irregularly	1/12/03
*Central Mataura	Central Mataura Gold-dredging Company	William Shore ..	Well-hole gangway required; boats not fully equipped; one boathook required	1/12/03
EDENDALE.				
Two Creeks	Two Creeks Gold-dredging Company	..	Dredge idle	..

WORKING DREDGES INSPECTED—*continued.*

Name of Dredge and Locality.	Owners.	Dredgemaster.	Remarks.	Dates of Visits.
WAIKAKA RIVER.				
Graham and party's, Waikaka..	Graham and party	J. A. Graham ..	Erecting machinery	20/4/03
			New dredge. Fully equipped with life-saving appliances, but machinery not efficiently guarded	3/7/03
			Dredge and life-saving appliances in fair order	5/11/03
Waikaka Syndicate, Waikaka ..	Waikaka Gold-dredging Syndicate..	R. Henderson ..	Winch-pinions, pump and pump-belts to be guarded; bows to be fenced	20/4/03
			Dredge and life-saving appliances in good order	3/11/03
Sheddon's Freehold, Waikaka ..	Sheddon's Freehold Gold-dredging Company	Thomas Stevenson	Bows to be fenced; otherwise dredge and life-saving appliances in good order	20/4/03
			Dredge and life-saving appliances in fair order	3/11/03
Sheddon Rex, Waikaka ..	Sheddon Rex Gold-dredging Company	W. Williamson ..	To guard engine and fly-wheel, and fence bows	20/4/03
			Some planks required about top gear; otherwise dredge and life-saving appliances in good order	3/11/03
Argyle, Waikaka	Argyle Gold-dredging Company ..	..	Building pontoons	20/4/03
		W. Williamson ..	Dredge will be ready in a few weeks	3/7/03
		D. Caithness ..	Dredge and life-saving appliances in fair order	3/11/03
Lee and party's steel dredge, Waikaka	Lee and party	— Wilson ..	Dredge and life-saving appliances in good order	3/7/03
Junction Waikaka	Junction Waikaka Gold-dredging Company	..	Building pontoons	4/4/03
Garden Gully, Waikaka ..	Garden Gully Gold-dredging Company	..	Re-erecting Central Waimumu dredge	3/11/03
Lilliesleaf, Waikaka	Lilliesleaf Gold-dredging Company..	R. F. White ..	Dredge and life-saving appliances in good order	22/4/03
			New pontoons being built for this dredge	4/11/03
Star, Waikaka	Star Gold-dredging Company ..	..	Building pontoons	4/11/03
Waikaka, Waikaka	Waikaka Gold-dredging Company..	J. Watt	Dredge and life-saving appliances in good order	22/4/03
Montrose, Waikaka	Montrose Gold-dredging Company..	..	Timber and machinery on the ground	3/11/03
Gleniti, Waikaka	McGeorge Bros.	..	Dredge undergoing repairs	3/11/03
McGeorge's Freehold, Waikaka	McGeorge Bros.	H. McColl ..	Set-screw on pump to be guarded, otherwise dredge and life-saving appliances in good order ..	22/4/03
			Dredge and life-saving appliances in fair order	3/11/03
Patterson's Freehold No. 1, Waikaka	Patterson's Freehold Gold-dredging Company	J. Patterson ..	Dredge and life-saving appliances in good order	22/4/03
			,, ,, ...	3/11/03
Patterson's Freehold No. 2 Waikaka	Ditto	,, ..	,, ,, ...	1/7/03
			Set-screw on pump-spindle to be guarded, otherwise dredge and life-saving appliances in good order	3/11/03
Record, Waikaka	McKenzie and party	H. McKenzie ..	Dredge now being worked on tribute	1/7/03
Phœnix, Waikaka	Phœnix Gold-dredging Syndicate ..	M. McCorkindale ..	Bows to be fenced	21/4/03
			Dredge and life-saving appliances in fair order	3/11/03
Perry's Pioneer, Waikaka ..	J. R. Perry	H. Parsons ..	Dredge and life-saving appliances in good order	21/4/03
		H. Rankin ..	,, ,, ...	3/11/03
LITTLE WAIKAKA RIVER.				
Little Waikaka, Waikaka ..	Little Waikaka Gold-dredging Company	J. Brownlee ..	,, ,, ...	1/7/03
Ibbotson's Waikaka	Ibbotson and party	T. Maslin ..	,, ,, ...	1/7/03
Globe, Waikaka	Globe Gold-dredging Company ..	W. J. T. Ayson ..	,, ,, ...	22/4/03
			Dredge idle	4/11/03
Waikaka United No. 1, Waikaka	Waikaka United Gold-dredging Company	L. Robinson ..	Dredge and life-saving appliances in good order	22/4/03
		— Louden ..	Heaving-lines required	4/11/03

WORKING DREDGES INSPECTED—*continued.*

Name of Dredge and Locality.	Owners.	Dredgemaster.	Remarks.	Dates of Visits.
LITTLE WAIKAKA RIVER—*contd.*				
Waikaka United No. 2, Waikaka	Waikaka United Gold-dredging Company	A. Blackie ..	Dredge and life-saving appliances in fair order	22/4/03
		S. Coard	Boathooks and light lines required	4/11/03
Waikaka Queen, Waikaka ..	Waikaka Queen Gold-dredging Company	J. Wallace ..	Dredge and life-saving appliances in good order	22/4/03
		,, ,,	.. ..	4/11/03
Waikaka Forks, Waikaka ..	Private syndicate	J. McNeil ..	Life-saving appliances in good order; the freeboard somewhat deficient	22/4/03
			Arrangements are being made to provide new pontoons	4/11/03
CHATTON.				
Ibbotson and party	Private syndicate	— Ibbotson ..	Well-hole and forward gangways required	24/4/03
WAIMUMU STREAM. *Waimumu.*				
Marshall Bros.	Messrs. Marshall Bros.	..	Erecting machinery	15/4/03
			Dredge and life-saving appliances in good order	2/7/03
Waimumu Queen	Waimumu Queen Gold-dredging Company	J. Murray ..	,, ,, ...	18/4/03
			,, ,, ...	2/7/03
Waimumu Extended	Waimumu Extended Gold-dredging Company	H. Leicester ..	Dredge and life-saving appliances in fair order	18/4/03
			Dredge undergoing repairs; Life-saving appliances in fair order	2/7/03
Waimumu	Waimumu Gold-dredging Company	J. F. T. Berendsen	Set-screws on pump and elevator driving-shaft to be guarded; pontoons to be fenced off of the pump; use of gangway under ladder to be discontinued	18/4/03
		C. S. Nicholson ..	Dredge and life-saving appliances in fair order	6/11/03
Waimumu Royal	Waimumu Royal Gold-dredging Company	W. Wilson ..	Dredge and life-saving appliances in good order	17/4/03
			,, ,, ...	6/11/03
Waimumu Central	Waimumu Central Gold-dredging Company	D. Caithness ..	,, ,, ...	17/4/03
			Dredge being removed to Garden Gully, Waikaka	6/11/03
Burrel's Freehold	Burrel's Freehold Gold-dredging Company	..	Dredge and life-saving appliances in good order	6/11/03
McLean's Freehold	McLean's Freehold Gold-dredging Company	..	Dredge idle	6/11/03
CHARLTON CREEK. *Charlton.*				
MacCharlton	MacCharlton Gold-dredging Company	P. Brandt ..	Dredge and life-saving appliances in good order	30/6/03
Charlton Creek	Charlton Creek Gold-dredging Company	C. Bennett ..	Dredge and life-saving appliances in fair order	30/6/03
Central Charlton	Central Charlton Gold-dredging Company	James McCorkindale	Dredge and life-saving appliances in good order	30/6/03
Charlton Valley	Charlton Valley Gold-dredging Company	Caretaker ..	Dredge standing; company in liquidation	30/6/03
Lady Charlton	Lady Charlton Gold-dredging Company	,, ..	,, ,, ...	30/6/03
WAIKAIA RIVER. *Waikaia.*				
Hessey's	Hessey's Gold-dredging Company ..	..	Pontoons building	3/2/03
		G. Pettigrew ..	Rail required on coal-door; main belts to be guarded; set-screws on collars on winch; projecting end of shaft to be cut off	9/7/03
			Dredge and life-saving appliances in good order	10/11/03

WORKING DREDGES INSPECTED—*continued.*

Name of Dredge and Locality.	Owners.	Dredgemaster.	Remarks.	Dates of Visits.
WAIKAIA RIVER—*continued.*				
Waikaia—continued.				
Mystery Flat	Mystery Flat Gold-dredging Company	Edward Lawson	Boat not equipped; bevel-pinions on winch driving-gear to be guarded	4/2/03
			Dredge and life-saving appliances in fair order; dredge undergoing repairs	9/7/03
Masterton	Masterton Gold-dredging Company		Dredging company being projected.	
Duke of Gordon	Duke of Gordon Gold-dredging Company		Erecting machinery	10/11/03
New Fairdown	New Fairdown Gold-dredging Company	D. Mitchell	,,	9/7/03
			New dredge not yet fully equipped with life-saving appliances	10/11/03
Waikaia	Waikaia Gold-dredging Company		Dredge projected.	
Waikaia, Kia Ora	Knewstubb Bros.		Building pontoons	11/11/03
Lady Annie, Waikaia	Lady Annie Gold-dredging Company		,,	11/11/03
Muddy Creek (Limited), Waikaia	Muddy Creek Gold-dredging Company	F. Browne	Forward gangway not fixed; starboard railing down; boat not equipped; to guard the main fly-wheel and rope-pulley	4/2/03
			Dredge and life-saving appliances in fair order	8/7/03
Garryowen, Waikaia	Garryowen Gold-dredging Company		Erecting machinery	4/2/03
		W. Robins	New dredge not yet fully equipped	9/7/03
			Two lifebuoys required; light lines and boathooks missing; bows to be fenced and forward gangway required	11/11/03
Nugent Wood, Waikaia	Nugent Wood Gold-dredging Company		Building pontoons	9/7/03
		E. Macdonald	New dredge not yet fully equipped	11/11/03
Nugget, Waikaia			This dredge closed down greater part of year; about to be shifted several miles down the river; not visited.	
WAIAU RIVER.				
*Belmont, Waiau Lagoon	F. Jack		This dredge after being taken some fifty miles down river, became wrecked at the lagoon near mouth of Waiau River, and now lies dismantled. Back broken; dredge dismantled	24/10/03

OTHER MINERALS.

Cinnabar

Waitahuna Cinnabar Company.—The work done by the company up to the present has been chiefly of the nature of prospecting. So far as operations have been carried on, no pocket of ore has been met with, but the work done has all been of a permanent character. Indications at the face appear to be favourable and indicative of the presence of ore not far distant. It would be advisable now to alter the mode of prospecting which has proved expensive, and test the value of the ore-deposits as indicated on the surface by small shafts. The mine is in good order and well timbered. Ventilation is procured by means of a water-blast. Operations have been suspended for some time owing to lack of funds to further prosecute the work. It would be unwise to abandon the work at this time, and further efforts to locate the ore-body would be justified.

Scheelite.

Twenty-six tons are returned as having been produced and exported during the year.

In addition to Macrae's, deposits of scheelite are known to exist at Glenorchy; Alta Reef, Bendigo; also in the Rock and Pillar, and Lammerlaw Ranges

Antimony.

Lodes occur at Alexandra, Waipori, Mount Stoker, and the Carrick Ranges, none of which are at present being worked.

Platinum.

This metal is associated with the auriferous deposits at Round Hill, Southland, and is recovered in the proportion of about 1 oz. of platinum per 100 oz. of gold saved; about 20 oz. of platinum having been sold by the Round Hill Mining Company during the year.

Phosphate Rock.

Approximately 4,400 tons of 60 per cent. to 80 per cent. rock have been produced and disposed of during the year. Several finds of phosphate had been reported, but only the Millburn and Clarendon deposits are at present being worked.

Fireclay.

Used for manufacture of fireclay goods, bricks, and sanitary pipes. The following outputs have been returned; T. N. Horsley, Springfield, Canterbury, 616 tons; Homebush Colliery, Glentunnel, Canterbury, 200 tons; P. McSkimming, Benhar, Otago, 2,034 tons: total, 2,850 tons.

Hæmatite.

One hundred and sixteen tons have been taken out by Messrs. Gilvray, Mataura, for use by the Mataura Paper-mills.

ACCIDENTS AND FATALITIES.

Quartz-mines.

Fatal.

24-11-1903.—John Hercus, miner, Golden Bar Quartz-mine, Macrae's, was killed by an explosion of gelignite in the mine. Investigation failed to disclose the actual cause of the explosion, which occurred while Hercus was presumably conveying a charge from the magazine to his working-face.

Non-fatal.

17-3-1903.—Henry Campbell, trucker, Shotover Quartz-mine, Skipper's, sustained fracture of collar-bone, and bruised leg, by falling into quartz-paddock when tipping a truck of quartz.

Hydraulic and Alluvial Mines.

Fatal.

30-3-1903.—William Turner, miner, Scandinavian Claim, St. Bathan's, crushed by a fall of clay from the side while employed sinking a hole for lowering the hydraulic elevator.

22-12-1903.—Robert Williamson, manager, Undaunted Gold-mining Claim, Nevis, crushed by a slip of rock from the side of a trench being sunk for pipe-line under the county road.

Non-fatal.

20-3-1903.—John Corbett, manager, New Skipper's Sluicing Company, Skipper's Point: Leg broken by a slide of material from the face jamming him against the pipe-line.

4-6-1903.—E. Deegan, nozzleman, Smith Gold-mining Company's Claim, Round Hill, while turning the nozzle stepped in front and was thrown against some stumps, with the result of three ribs broken.

Gold-dredges.

Fatal.

2-3-1903.—William Henry Hughes, Engineer, Unity dredge, Clyde: Fracture of skull; fall from friction-framing to deck, 8 ft.

9-7-1903.—Samuel McAuley, fireman, Roxburgh Jubilee dredge, Roxburgh: Foot torn off by a screen-roller. Succumbed to injury, 17th July, 1903.

3-11-1903.—Andrew Taylor, fireman, Pringle and party's dredge, Pride of Clutha No. 2, Miller's Flat: Drowned by being jerked out of the boat while lifting dredge side-line over bow-post.

Non-fatal.

29–1–1903.—E. Eaton, engineer, Perseverance No. 1 Alexandra: Foot crushed by elevator against the side causing lacerated wound of the heel.

5–2–1903.—F. Cameron, engine-driver, Teviot dredge, Roxburgh: Fracture of leg—crossing bucket-belt in motion.

9–3–1903.—J. White, engine-driver, Waimumu dredge, Waimumu: Right hand scalded when forcing in one of the mudhole-doors before the steam-pressure was off the boiler.

16–3–1903.—John O'Brien, engine-driver, Gold King dredge, Roxburgh: Hand caught (necessitating amputation of two fingers) while cleaning governors with a bit of waste.

16–3–1903.—A. Andrews, cadet, Lower Enfield dredge, Waipori: Bruised leg and arm—while oiling machinery in motion, foot caught between belt-pulley and friction.

11–4–1903.—J. Maxwell, labourer, Oceanic Steam-dredge, Waipori: Fracture of left thigh and bruised calf of leg—fell on the bow of the pontoon.

1–7–1903.—H. Leicester, dredgemaster, Waimumu Extended dredge, Mataura: Right leg broken above ankle—pinned by bucket which had fallen when the tumbler was raised, at which work Leicester was assisting.

21–7–1903.—G. Pettigrew, Gold Bank dredge, Glenore: Left chest squeezed between belt and housing by engine taking a turn after being centred.

25–9–1903.—J. Ford, fireman, McGeorge Bros.' Freehold dredge, Waikaka: Fingers crushed under the rope between fair-lead and sheave while putting on a string of new buckets. Found necessary to amputate thumb and third finger of left hand.

28–9–1903.—J. Melvin, winchman, Lady Roxburgh dredge, Roxburgh: Slight concussion of brain—fell off ladder on to deck while attending to winch-lamp.

9–10–1903.—V. Morris, fireman, Junction Electric No. 1 dredge, Cromwell: Foot injured by a bucket falling on it, while assisting to remove bucket and set of links.

10–10–1903.—G. Scoles, blacksmith, Electric No. 1 dredge, Cromwell: Struck on forehead and right arm by handle of hand-winch which suddenly reversed while using it.

10–11–1903.—Henry Tucker, Spec Gully dredge, Charlton, Gore: Thumb of right hand crushed on ladder-roller.

I have, &c.,
E. R. Green,
Inspector of Mines.

The Under-Secretary, Mines Department, Wellington.

REPORTS OF WARDENS.

Mr. Warden Hutchison to the Under-Secretary for Mines, Wellington.

Sir,— Warden's Office, Auckland, 11th February, 1904.

I beg to transmit herewith the forms of return for Warden's Court at Whangarei.

There is nothing to report as to the condition of mining in the Puhipuhi District, mining there having long since ceased.

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, 6th June, 1904.

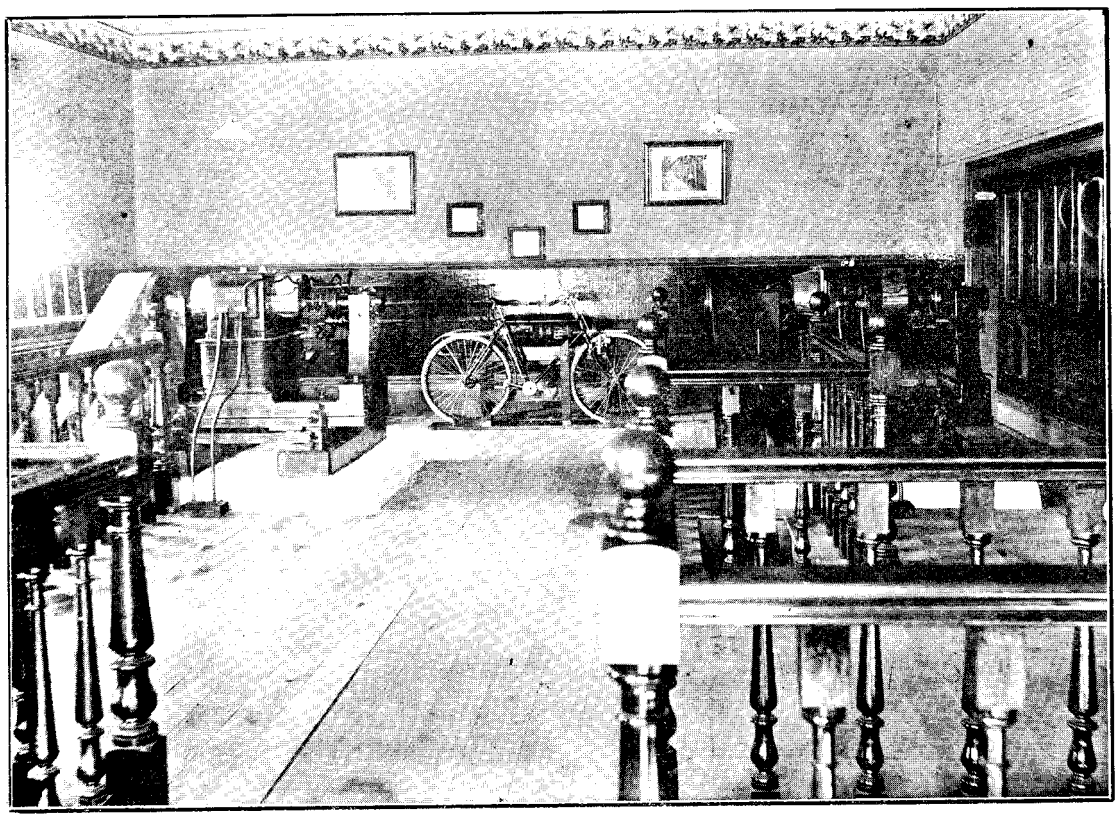
I have the honour to forward the usual annual report on mining matters for the past year for the district under my control.

Although the production of gold in the Hauraki Mining District is increasing yet it is a matter for regret to be forced to write, that some of the mines which for some years past have added considerably to the gold-yield, are at present not only non-producers but have ceased to exist. Notwithstanding this, the production for three weeks in the month of May last totalled over £65,000, the Waihi Mine being responsible for something over £50,000 of this. Even if this amount represented the month's return, the yearly total would be £780,000, but the last Waihi return to hand is over £52,000 for the month. If this can be maintained and other mines add a more fortunate quota than was the case during the past year, I see no reason why £1,000,000 should not be reached during the ensuing twelve months.

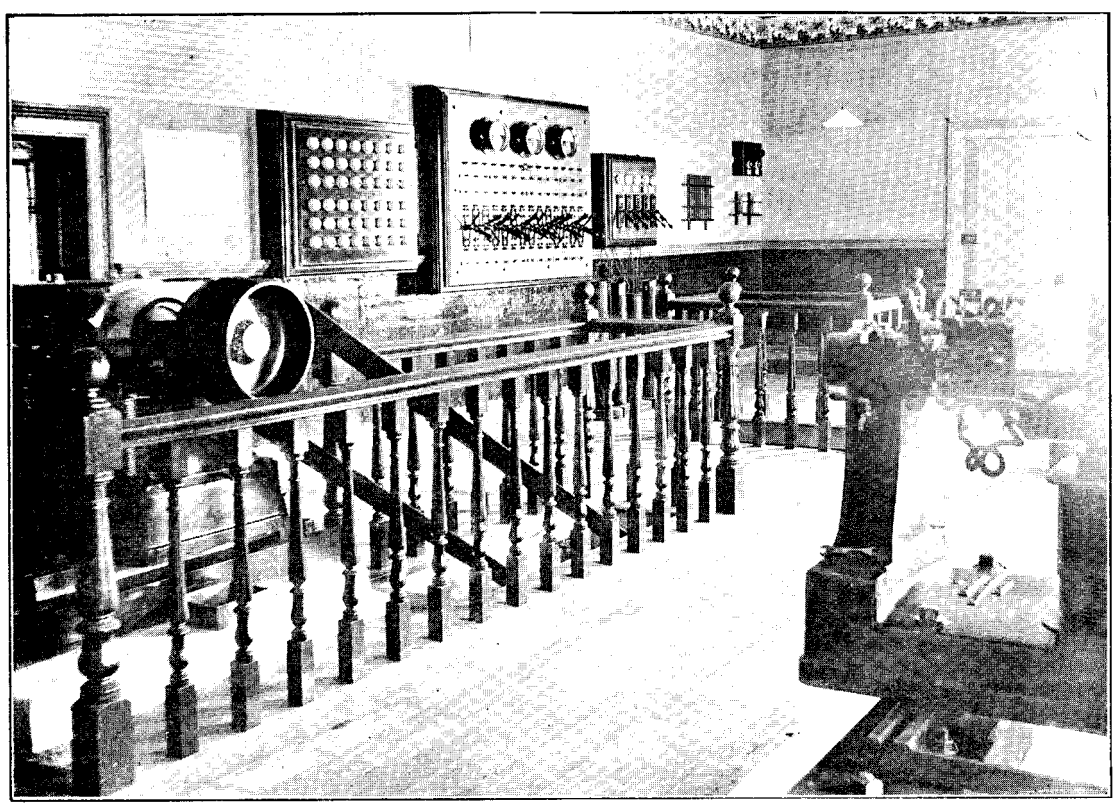
Unfortunately, mining in this district is uncertain inasmuch as, in portions of it the gold-deposit is patchy, but when found is very rich; while in other portions without the expenditure of much capital the reef-system cannot be reached, consequently, unless means are at hand to make a claim into what may ultimately prove to be a remunerative speculation, money-owners are not forthcoming, hence many of our mines which have had several thousands spent upon them, are languishing and in an unproductive condition, no one knowing what their future may be.

Great hopes are entertained that in the event of the Grand Junction properties proving gold-bearing, an inducement will be offered to investors to assist other properties in the locality with capital for development purposes. Many are living in hope of ultimate assistance reaching them, chiefly built upon the expected results from the Grand Junction Mine. It is the general opinion, that if this company is successful in securing fairly good results after starting crushing, the present tightness in the money-market will be much relaxed. Capital judiciously spent, would, I feel sure, prove of great benefit to the field.

It is anticipated that the boring operations now in progress in this district, will eventually result in locating some gold-bearing reefs which can not otherwise be discovered except at very great cost.



DYNAMO ROOM, WAIKINO BATTERY, WAIHI GOLD-MINING COMPANY.



DYNAMO ROOM, WAIKINO BATTERY, WAIHI GOLD-MINING COMPANY.

THAMES.

Moanataiari: The New Moanataiari Gold-mining Company (Limited) becoming disgusted at their want of success decided to give up business, and early in the year sold all their properties at public auction. The purchasers, Messrs. J. J. Craig and C. C. McWilliam, endeavoured to form a company to work the mine in conjunction with the May Queen property (which had also been bought by them), but without success. Later on, Mr. H. H. Adams purchased the properties from them, and formed a company to work the Alburnia and this ground together by extending the Moanataiari tunnel towards the Alburnia. The new owners went to work at once, and let a contract for some 300 ft. of driving. When nearing the end of this contract a reef about 2 ft. wide was met with carrying a little gold. This discovery is looked upon as important inasmuch as it is in unprospected ground, and others more valuable may be met at any time. Tributers have been employed for the most part of the year, and crushed 603 tons of ore, and 51 lb. of specimen for a return of £2,021 6s. 4d.

Alburnia: This mine (as I have mentioned), is being worked through the Moanataiari tunnel. It is the intention of the company to extend the drive to the Alburnia shaft at a considerable depth to see if the reefs which existed in the upper levels continue downwards. Tributers took out 478½ tons of ore, and 115 lb. of specimens which yielded £2,089 3s. 1d.

Kuranui Caledonian: A few wages-men were employed during the early part of the year in prospecting about the shaft at No. 1 level, but when the borehole was commenced it was decided to await the result of its operations before putting on paid men, the ground being fully manned by tributers. The bore, the first of a series, was commenced in September, and for a while made good progress, though the country through which it passed for 950 ft. was not of a very good character. As it went down the country improved until at 1,041 ft. it was first-class. The Caledonian No. 1 reef was cut at this depth, but being of a rubbly nature it was decided to continue the hole to 1,500 ft. The rock at the depth of 1,034 ft. was assayed, and valued at 11s. 3d. per ton. At 1,041 ft. the bit stuck, and the hole had to be reamed to 4½ in. to envelop the rod and casing, but up to the present the diamonds have not been recovered. Tributers crushed 793½ tons of general dirt, and 825 lb. specimens for a return of 1,735 oz. 7 dwt. of gold; value £4,707 4s. 5d.

Victoria Mine: A borehole is being put down on the foreshore with the object of testing the country at 1,500 ft. and is now down 380 ft. It is expected that solid ground will be met with at 1,000 ft. The ground has been worked principally by tributers, who crushed 170 tons of ore, and obtained 212 oz. 9 dwt. of gold, worth £586 4s. 6d.

Kuranui Mine: This mine has been steadily worked during the year, but nothing payable has been discovered. The tunnel level has been extended 450 ft., and two rises put up 80 ft. Highly mineralised ore was met with in the drive which yielded 12 dwt. to the ton. It was expected that the ore would improve in value as the reef went down, but so far there has been no appreciable improvement. Twelve men have been employed and twenty-two loads of general ore crushed for a return of 14 oz. 8 dwt., value £34 13s. 8d.

Waiotahi Mine: This mine has been carrying on its operations on the small leaders with remunerative results. No new works have been commenced, but I am informed that in a few months' time it is intended to sink the main shaft 100 ft., and then open out. If the same class of country continues, a new era of prosperity for this good old mine may set in. A total of 865 tons of quartz was crushed at the company's own mill for a return of £3,856 12s. Of this sum £900 was paid in dividends.

Fame and Fortune Mine: This mine has been wholly worked by tributers. Operations have been confined to the hanging-wall of the Golden Age reef, and 300 tons of ore, and 35 lb. of picked stone crushed which yielded 364 oz. 11 dwt. of gold, value £937 1s. This company has a battery which crushes for the public, and there have been six men employed in it.

West Coast Claim: Two men have been engaged in driving and stoping on small leaders, and 43 tons of ore have been crushed for a return of 57 oz. 15 dwt., value £155 18s. 6d.

Ballarat Claim: This claim has been worked by two men, who took out 28½ tons of general ore which yielded 97 oz. 14 dwt., value £286 15s. 9d.

Nonpariel Mine: Seven tributers have been employed principally on the Liverpool Boys reef, and Wade's leader. The former reef gave fair results in the lower levels but the upper levels were not payable. The reefs vary from 4 in. to 15 in. Picked stone, 7 lb., and quartz, 140 tons, was crushed, and gave a return of £451 6s.

May Queen Hauraki Mine: Early in the year this mine was sold by auction to Messrs. J. J. Craig and C. C. McMillan, who endeavoured to float a company, but without success. They then let a contract for driving a crosscut at No. 2 level in the Saxon section for the purpose of cutting the Cardigan Nos. 1 and 2 lodes. The lodes were met with, and driven on for a few feet, and two loads taken out which yielded £13 7s. 10d. In other parts of the mine tributers have been working, but I do not think they were very successful. A total of 514 tons was treated, and yielded £1,949 13s. 5d.

May Queen Extended Mine: The main works have been the extension of the crosscut towards the Odd Fellows reef, and driving and stoping on the new reef. The Odd Fellows reef not being met with where it was expected, work was suspended and stoping on the new reef commenced. A block of ground was opened up 115 ft. by 60 ft., the average width of the reef being 10 in. The western drive was extended to 113 ft. Ore from both ends of the drive was treated also a few pounds of picked stone. The general ore occasionally showed gold, and it was expected to go well. About 380 tons was crushed for a return of 298 oz. 17 dwt., value £859 17s. As this return was just about payable, the manager decided to keep on stoping in hopes that the reef might improve. Seven men were employed.

Thames Talisman Mine: The mine has been protected for most of the year. Four men have been employed lately in cleaning out and repairing the upper level where the Grand Trunk reef was worked in the early days. The manager is of opinion that this reef has not been worked out.

New Una Mine: This mine is situated at Una Hill, and was many years ago held by the Una Company, and was lately known as the Thames. The present owners are engaged in putting in a low level to test the ground from the Karaka Creek side. It is thought they may come across the German and Royalty reefs. This portion of the field has not been tested at so deep a level, and should payable ore be found, the prospects of the mine paying dividends would be very good indeed. Seven men are employed.

Gloucester and George Turnbull Mines: These claims are being worked by the Arrindell Syndicate formed in Glasgow. Two men are at present employed in extending the low level. A five-stamp battery has been brought out from Scotland, and is to be erected at the mine.

Fortuna Hauraki Mine: Tributers have been working in the surface-working on leaders, and took out 32½ tons of quartz, and 30 lb. picked stone, which yielded 74 oz. 15 dwt. of gold, value £205 11s. 3d.

The Weymouth, Otanui Consols, Ethel Reefs, and Anchor Claims have all been more or less worked, but there is nothing of any importance to report.

Eclipse Mine: The payable ore found in the upper levels having given out, and the company being without funds, it was decided to sell the mine and battery. Mr. H. H. Adams became the purchaser, and without delay formed a company, and commenced to put in a low level to cut the reef at a depth below the spot where the payable ore was found in the upper level. If the reef is payable in this low level a large block will be available for stoping. The prospects at present are very good. Seven men are employed.

The Tararu Creek Mine has been under protection pending the result of a visit to England by Mr. R. W. Powell, the manager, to raise more capital, and confer with his principals. Mr. Powell fully expects to raise more money, and proposes to put in a low level towards the Sunbeam creek.

The Golden Drop, Argosy, Temple Bar, and Bullion have had two men each employed, but only small returns have been obtained.

Puru Consolidated Mine: This mine has been worked on tribute by P. Maher, who stoped out a block of ground over No. 2 level, and obtained 415 tons of ore, and 100 lb. of picked stone, which yielded £461 14s. 6d.

Monowai Mine: I am sorry to have to report that this mine has ceased operations and is to be sold. Up to September the prospects were bright, but about that time the ore becoming less valuable, and of a more refractory nature, the company decided to cease operations. The ore was crushed in their own battery, and the concentrates shipped to New South Wales for treatment. This greatly increased the cost of recovery, so that nothing but fairly rich ore will pay. The company deserves a better fate for it has steadily prospected its ground, and tried many modes of treating the ore. Thirty-five men have been employed, and 1,387 tons of ore has been treated for a return of £1,584.

Sheridan Mine: A new company was formed about November, and commenced to sink a winze from No. 2 level on a leader in the hanging-wall of the Sheridan reef. The winze is down 50 ft., and dabs of gold have been seen. It is intended to go down another 10 ft. and then open out. The pass will be repaired, so that quartz can be sent to the low-level for conveyance to the battery. The company crushed 5 tons of ore for a return of £33 1s. 10d.

Mahara Royal Mine: The old company having called up all its capital, and finding it difficult to raise more, sold the mine and battery to Mr. H. H. Adams's syndicate. A local company was at once formed, and work begun. A low level was driven 520 ft., and a lode intersected from 4 ft. to 7 ft. in width. It was found to be of poor quality at this point, but improved after having been driven on for 120 ft., where a rich patch was struck below where payable ore had been worked in the top level. A winze on this reef was sunk a few feet, but had to be discontinued on account of water. The company intends erecting a small pumping plant over this winze, which, when in working-order, will enable them to open up a new block, and also test the lode at or below the level. Stoping operations are now in progress on a payable lode of ore found when extending the level, and will be continued until the pumps are at work. Twenty men have been employed.

Mananu Mine: This mine is closed down and under protection. A good deal of money has been spent in prospecting the various reefs, but none of them were found payable. During the early part of the year the reef at No. 4 level was driven on for 155 ft., but was found to be not payable. It contains a good deal of mineral and is a hard blue quartz. A good deal of work was done on the same reef at No. 3 level, but with no better results. In the Rapid section the No. 1 reef at the surface has been worked on, but it got smaller as it went down and less in value, so that it was not payable. Six men were employed, and 370 tons of quartz crushed for a return of £333.

Tairua-Broken Hills Mine: During the year this mine has been well and carefully worked with satisfactory results, the sum of £10,306 having been paid in dividends. Generally the operations have consisted of driving, rising, and stoping the Blucher, Night, and Puon reefs. The Blucher reef yielded highly payable ore in the intermediate level, and has been extensively worked. From tests made from time to time of the New Year, and Wellington reefs it is thought that they will also pay well. Generally the prospects of the mine continuing to be payable are very favourable.

Coronation and Coronation Extended Claims have been worked with from two to six men. At the surface good prospects were obtained, and a level put in for the purpose of cutting the lodes, but up to the present payable ore has not been met with.

The Taniwha Mine has had three men employed in prospecting. A large lode at the surface has been worked, and 42 tons of quartz crushed which yielded £190 1s. 1d. The lode-formation is mostly rock with small quartz stringer running through it carrying the gold. The crushing-ore has to be selected, so that the results are hardly payable.

The Myosotis-Gem and Golden Hills Claims have been prospected, but there is nothing of importance to report.

Chelmsford.—The low level was extended, but the reef did not turn out as well as was expected, so the mine closed down and is now under protection. Efforts are being made to obtain more capital to put in a lower level.

Golden Belt Mine: The old low level has been extended and the lode driven on for some distance. Valuable ore was met with, and a large quantity taken out and stacked. A main low level is now being put in lower down the creek, which, when completed, will be connected with the upper levels. An aerial tramway is in course of erection which will convey the ore to the battery now in course of erection. This battery, together with a cyanide plant, was purchased from the Alpha Company, and brought from Waitekauri. Ten heads of stamps were also purchased from the Hauraki-Associated Company at Coromandel, and when added to the others will give a total of thirty stamps. Eight men have been employed.

The Chester Claim was worked by Murphy and party, who crushed 76 lb. of picked stone for a yield of 22 oz. 15 dwt.

Several claims have been applied for in this district, but very little work has been done outside the Golden Belt.

Klondyke Mine: In the early part of the year this mine was fairly well worked, and 125 tons of ore taken out and crushed for a return of 17 oz. 6 dwt., value £41 16s. 6d. As this was not payable, operations were stopped, and protection applied for pending the results of experiments which were commenced for the purpose of ascertainng the best method of treating the ore.

The Sheet Anchor and We Three Claims have been prospected, and although several small reefs were cut through which carry a little gold, no payable lode was discovered. The country at the surface is very much broken, but it is hoped will improve in the low level now being commenced.

Karangahake.

New Zealand Crown Mines: This company has been prosecuting its mining operations with its usual vigour, employing a large staff of men in the mine and reduction-works. Some three hundred men find employment on its works besides those employed in providing timber for its use. The amount of timber required for this mine costs over £100 a month, which at 8s. per hundred represents a very large quantity of that material. This mine, however, for the past few months has been somewhat unfortunate in having to deal with rather a poor quality of ore which has caused a falling-off in the value of its monthly returns, but still the returns to hand are of sufficient value to give a small margin of profit. This company has a large sum invested in machinery of every kind necessary to carry on its operations, and all that it requires is to discover a richer block of ore to enable it to make the good returns of last year, which I have no doubt it will again be doing ere long, as a vein assaying £2 per ton has been unearthed in No. 4 level, which however is described as irregular; but further development may lead to something better. A good body of ore has already been struck.

The Talisman Consolidated have had a much improved year, having secured gold to the value of £88,079, which shows an average yield per month of £7,340. This is an increase of £20,763 upon the previous twelve months' returns. The present position of this mine seems eminently satisfactory; let us hope the future will prove it to be one of our consistent gold-producers. During the year an average of 155 men have been employed upon its works. The incline shaft from No. 8 to No. 11 level has been completed, and is working well. A rise from No. 11 level connects with this shaft. A drive from the Woodstock No. 5 level along the face of the reef has been carried to a point where the shaft will come down. Altogether the present prospects of this mine are cheering.

The Woodstock Gold-mining Company have done little or nothing during the past year for want of funds. The company, it is stated, are liquidating, and it is rumoured that the property has been acquired by the Talisman Consolidated Company. The northern section of this property is almost entirely undeveloped, and is said to carry a larger reef-area than the southern portion, to which the whole attention of the old company was practically devoted.

These three properties are practically the only ones that can be termed mines, as no others have developed and proved to be auriferous. The Crown and Talisman especially have proved to be good payable mines. There are a few other special claims still in existence, notably, two called the Saxon Nos. 1 and 2, which a Sydney firm are endeavouring to float. They have some faith in the ground, as they are paying the rent, and prospecting the ground with two men.

Then there is the Comstock United, held by a very hopeful man, who for the last two or three years has just been on the point of cutting the reef; a reef which is to astonisd the world, and to excel anything ever met with in the Waihi Mine. This reef has not yet been discovered although the owner positively asserts it is there, and professes to be working hard to reach it.

The Rising Sun at Owharoa is another claim upon which the owners have spent a considerable sum of money in trying to turn it into a mine. They have pluckily stuck to it, and it is not their fault that it is not a gold-mine. They have no present intention of giving it up, but intend to prosecute their researches in the hope of ultimate success. Perseverance such as they have displayed deserves to be rewarded; time and energy may discover something in the ground later on, as it is in the vicinity of a claim from which a large quantity of gold was obtained in years past.

That section of the Ohinemuri River claims, extending from Karangahake to the junction of the river, has been protected pending the tests being made with regard to other of the claims, at the works erected at Waihi, with a view to ascertaining what was actually required to treat the slimes before incurring the expense of a second plant.

Komata.—The Komata Reefs Mine has during the past year proved itself a consistent gold-producer, and there is every prospect of its continuing to be so. This company's crushings for the twelve months ending the 31st March last, totalled £37,132, the monthly return being fairly uniform.

There are three or four other claims in this locality in existence, but none of them so far have realised expectations.

The Hikutaia Syndicate after struggling for years have at last had to surrender the bulk of their ground, retaining an area less than 100 acres.

At Maratoto the old company not having met with anything to recoup their outlay have sold their property. Of the new owner's intentions nothing is at present known.

There are one or two other holdings here, but there is nothing to report of interest in connection with them.

Waitekauri.

The Waitekauri Gold-mining Company have had another very unsuccessful year searching for gold. Between thirty and forty men have been employed on their various properties. The battery has been at a standstill, but a considerable amount of development mining has been carried on at various sections of the ground, which no doubt will shortly recoup them for the outlay they have been put to. A great deal of gold has been obtained from both the Golden Cross and Waitekauri sections of this property, and there is no reason why some more should not yet be secured.

The Waitekauri Extended section of this company's property has yielded nothing this year, and another battery there is standing idle.

The Jubilee Company's claims are protected at the present time. I understand an effort is being made to raise further capital for further development-works, but it has not yet been secured.

Want of capital is the greatest barrier to the successful development of some at least of our claims; such a vast capital being required to make one of them into a mine that capitalists are chary to risk their money in perhaps something which, though gold-bearing, may not turn out very remunerative.

Besides these larger areas there are several smaller extended claims in existence, but as one individual man owns each of these, very little is likely to be heard of them, unless by some fortuitous chance one or other of them turns out very rich.

The Ohinemuri Syndicate at Owharoa, after struggling on for some years, have at last given up mining their ground, and sold the machinery they had erected there.

Two coal leases have been taken up under the Coal-mines Act in the vicinity of Karangahake. Report says, coal of a good quality has been discovered on the ground taken up.

Waihi.

The great Waihi Mine has produced over fifty thousand pounds' worth of gold every month during the past year, and the company has displayed its usual energy in its mining operations. A new pumping plant has been imported to supplement those already in use. It is said that when this plant is erected and in working-order, the company will have pumping machinery at work valued at £130,000. The new pump is for erection at the No. 5 shaft, indeed its erection is nearly completed. It is a very massive piece of machinery, and going at a nominal speed, will raise 1,500 gallons of water per minute to a height of 1,550 ft. The other two pumps raise 1,000 gallons per minute and 800 gallons per minute respectively to 1,000 ft. The three pumps running together at a nominal speed will be able to raise 3,300 gallons of water per minute to a height of from 1,000 ft. to over 1,500 ft. If taxed, the new pump will be able to raise 2,000 gallons of water per minute. The company has employed twelve hundred men in and about its mining operations, and there is every prospect of this number being much increased in the near future, as, with the new pumping machinery in full work, the deeper levels will be thoroughly prospected and developed, when, should they prove anything like as rich as the upper ones, a great many more men will be required to carry the work on in them.

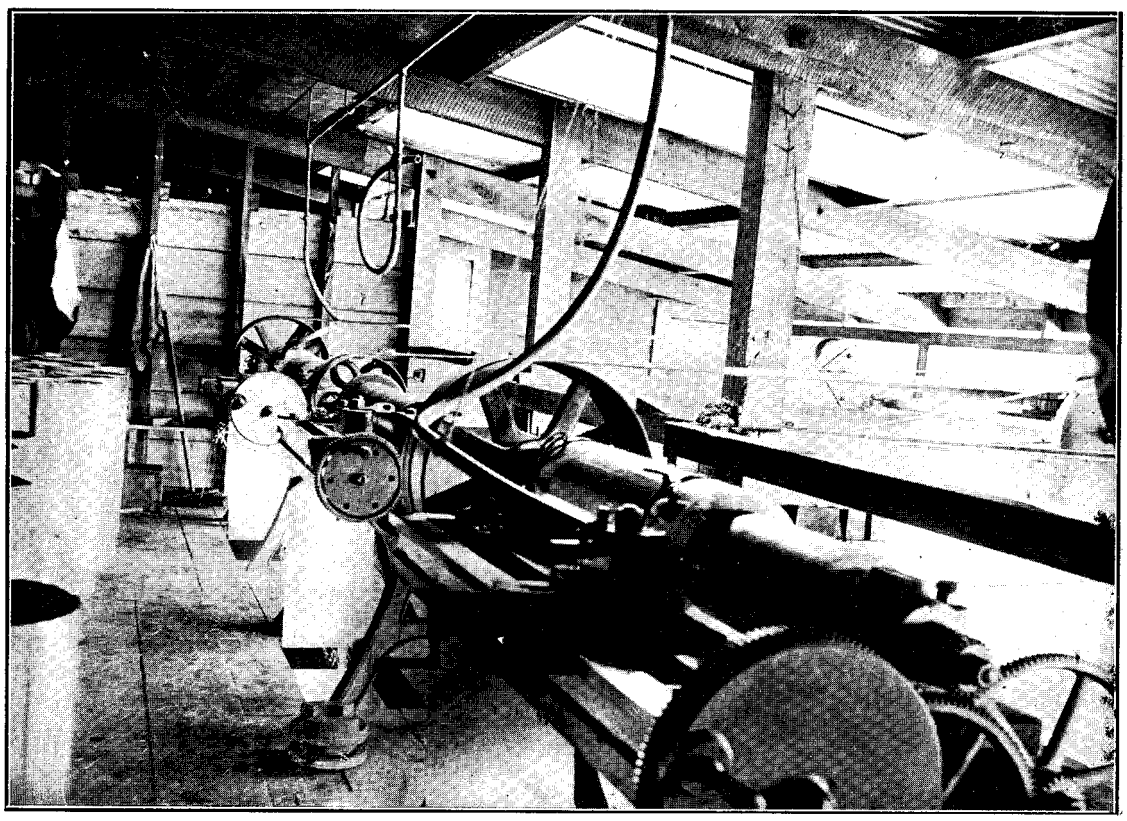
The Grand Junction has purchased the battery erected at Opitonui by the Kauri Freeholds Gold Estates, which is being taken down and removed to Waihi for erection there; I trust, therefore, when reporting next year, I may be able to report this mine as another gold-producer. This company up to the present has received nothing for the £150,000 spent upon its property. The great quantity of water met with has been one of the main obstacles to their success. There is from all accounts, very little doubt as to a rich gold deposit being in this property, which boring tests have more recently confirmed.

Altogether between 4,000 and 5,000 acres at Waihi are held under mining-licenses as claims, but so far only one of the mines within this area is a gold-producer. The others are in some cases working away trying to find the precious metal, while others are frequently changing hands, each holder in turn trying hard to raise capital, failure to do which necessitates a surrender. This takes place periodically, but so far none of the holders have succeeded in securing the wished-for means for developing any of them. It is anticipated that in the event of the Grand Junction being successful in securing fair returns, a fair prospect for obtaining money from England will be secured, hence the desire to keep possession of these claims.

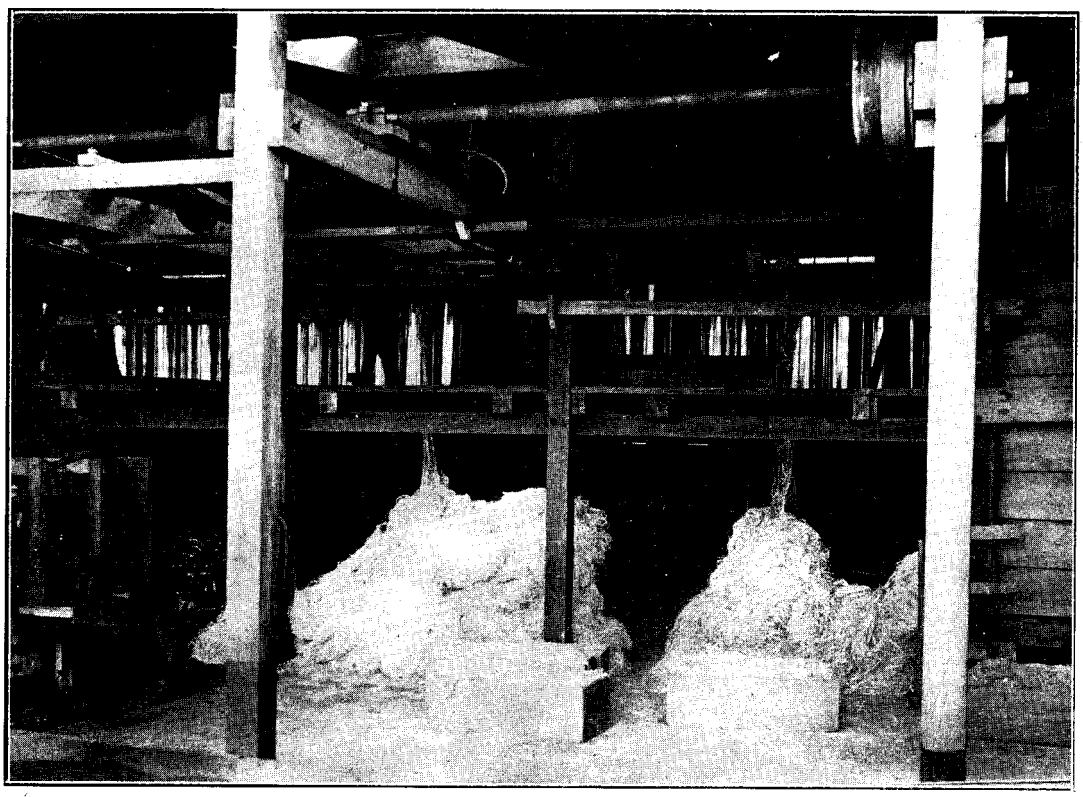
The Waihi Extended, the Waihi Consols, the Waihi Consolidated, and the Waihi South have all spent considerable sums upon the ground held by them in trying to find what reefs they possess; but so far with poor results, in fact with no results whatever. Recently, however, one or two of the companies have been endeavouring to prospect by boring, but so far nothing in the nature of reefs has been met with, and the drilling company have met with many difficulties from the nature of the ground that they did not anticipate having to contend with; these circumstances have tended to defer the acquirement of that knowledge which it was hoped the boring would have rapidly disclosed. The Waihi Extended however have been working with twelve men during the past year, and it is reported have recently met with a good-looking lode.

Of the other claims there is nothing to report, except that on the Waihi Beach work has been carried on with a reduced number of men.

The Ohinemuri River Claims Syndicate after erecting a plant for treating old tailings deposited in the bed of the river, discovered that many things required altering, while other articles had to be substituted. These conditions have caused many difficulties and delays, and very materially increased



ZINC-CUTTING MACHINES, WAIKINO BATTERY, WAIHI GOLD-MINING COMPANY.



ZINC-CUTTING MACHINES, WAIKINO BATTERY, WAIHI GOLD-MINING COMPANY.

the cost of the plant, besides deferring the knowledge as to whether the plant will successfully treat the substances so as to remunerate the syndicate. As it is a new industry in connection with mining in these parts, I trust the plucky enterprise will prove successful, the more so as it will be the means of employing a considerable number of men. This syndicate has spent between £7,000 and £8,000 on their plant already.

Coromandel.

In this portion of the field 2,507 acres are held as mining claims, upon some of which very little work of any kind is being done, while some of the properties which for a time looked so well and promising have absolutely died out, even the old Kapanga Company's mine now no longer exists. The machinery that was erected upon it has been dismantled, and disposed of. This mine was the oldest on the field, and for years was a promising property, producing considerable quantities of gold. A portion of the old claim has been taken up by Coromandel people, who still have faith in it. Gold is still being obtained in this portion of the district, but in much smaller quantities than was the case a few years ago.

On the Kauri Block the Hauraki Mines (under the new company) continued working during the year with only moderate results from its crushings.

The Bunker's Hill Mine has carried on continuous work with good results, having had some crushings of fair value.

The Hauraki Freeholds, which adjoins the Bunker's property, have been following the latter's reef, and have also been driving from the Welcome Find shaft towards the Hauraki North.

Tributing is being carried on around the beach below the Hauraki Mine in the Golden Pah and vicinity with various success.

Messrs. Shepherd and Patterson have worked a cyanide tailings plant on the beach near here for some considerable time with payable results.

In the vicinity of Driving Creek prospecting has been carried on in a section of the old Kapanga claim, now known as the South Kapanga, where some gold-bearing stone has been procured.

In the New Hero a syndicate has been prospecting for some time, but so far the results have not been very encouraging.

Several parties are prospecting about Paul's Creek, but have obtained nothing of much value.

On the Tokatea, the Royal Oak Mine is still being worked, and getting gold. During the last few weeks several lots of picked stone have been secured, which has considerably raised the future prospects of this mine. At present, a scheme to amalgamate with other smaller surrounding holdings is mooted, so as to form a strong company, which proposes working on a more extensive scale.

The Harbour View Syndicate's Claim has carried on considerable work with poor results.

The Golden Spark has been acquired by a company, and the prospects appear good.

The West Tokatea Mines have worked consistently through the year, but the results have not been too encouraging. During the last few months operations have again been pushed forward with renewed vigour.

The New Four-in-Hand have carried on some very useful development-work with a view to thoroughly testing the ground, and are well satisfied with the results so far. I have not the least doubt this mine will again shortly be producing gold.

Some very good returns have come to hand from the New Tandem Mine during the year.

Kennedy Bay.—Prospecting of an encouraging nature has been carried on up the Omoho Creek, where some good stone has been obtained.

Cabbage Bay.—The White Star Company are the only holders here, but the results of their workings have been so indifferent that they had to seek protection.

Matamataharakeke.—The Macaronic and other claims have been worked steadily, and hopes are entertained of eventually securing large reefs of medium value.

Kuaotunu.—The Waitaia and the Hamsworth are the only two properties that have been at all consistent during the year as gold-producers. The other claims in this locality have been principally in the hands of tributers with varying success.

Kapowai Block, Gumtown.—The Kapowai Mine has had several fair crushings, and is still working with good prospects.

Tiki.—The Progress Castle Rock and Vaughan Claims are in the hands of private individuals, who are prospecting, but the results have not been encouraging.

Te Aroha.

In this portion of the field mining is extremely quiescent. Only about 270 acres are held as mining claims; of this area, 142 acres are held by Mr. Hardy, who really is the only holder who has done anything in the way of producing gold during the year. In connection with Mr. Hardy's mine there is a battery, a water-race, and other plant necessary for succesfully working a mine. Recently this property has been taken over by a company; whether this will prove an advantage to the field or otherwise remains to be seen. The object, I understand, was to secure more capital for development purposes. The balance of the area held by other persons may be described as more or less protected.

I have, &c.,

R. S. Bush, Warden.

The Under-Secretary, Mines Department, Wellington.

Mr. Warden ROBERTS, Tauranga, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,— Warden's Office, Tauranga, 8th March, 1904.

I have the honour to acknowledge the receipt of your circular, No. 1 of the 23rd January last, and in reply thereto beg to report for your information as follows :—

During the twelve months ended the 31st December, 1903, a considerable amount of development-work was carried out in the early part of the year by an Auckland syndicate, who held an option over the Te Puke Gold Reefs Company's property. In the early part of the year there appeared to be a fair prospect of the mine being floated, and the necessary capital to work it being raised, but the option-holders have thrown up their option, and the property has reverted back to the company.

No other work of importance has been done on the field.

The forms forwarded with your circular are filled up and attached hereto.

I have, &c.,
J. M. ROBERTS, Warden.

The Under-Secretary, Mines Department, Wellington.

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

SIR,— Warden's Office, Blenheim, 13th May, 1904.

I have the honour to report that during the year ended the 31st December last, the gold-mining industry made but little, if any, progress in the Marlborough Mining District. Quartz-mining was practically confined to the operations of the Jubilee Company at Top Valley, and its operations were apparently none too successful, for in December it was found necessary to shut down with a view to reconstructing the company for the purpose of obtaining additional capital to exploit the reef in deep ground. During the year, however, this company has given employment, on an average, to twenty-two men, and has done about 290 ft. of driving and crosscutting. 1,704 tons of stone was crushed for a yield of 548 oz., and 1,100 tons of sand was treated by the cyanide process, producing 72 oz. of gold ; the total value of the gold obtained being £2,118 17s. 3d. It is estimated that a tunnel 1,200 ft. in length will require to be driven to give from 500 ft. to 600 ft. of backs on the reef, but as this tunnel will be a crosscut, it is hoped that other lodes will be intersected during the prosecution of the work.

As regards dredging, of the two companies in operation, it may be said that the Golden Point dredge at Wakamarina was swamped during a flood in July last, and has only recently been raised and placed in working-order on the claim. Prior to the accident, small returns were obtained, but the shareholders have not so far received any return for the capital invested.

At Arm Chair Creek the Alpine Gold-dredging Company's operations have been delayed by a series of misfortunes. A dredge, formerly known as the Omdurman, was purchased from the Egmont Company, the intention being to place it on the claim in Arm Chair Creek, whither it was to work its way by dredging. Before, however, a start was made, a flood came down the creek in which the dredge was moored, and she capsized. Having been placed in working-order again at a cost of about £600, another flood was experienced, and on this occasion, the dredge, which was, it seems, not properly secured, was carried about half a mile down the creek, where she now lies stranded.

No alluvial mining of any consequence is carried on, the miners so engaged being mostly old men, who do a little fossicking.

Speaking of other industries, the proposed manufacture of cement and lime at or near the Elevation, Picton, may be mentioned. A company was formed and registered for this purpose during the year under review, the scene of the operations originally intended being the Meadowbank Estate, near Blenheim ; but it has since been decided to abandon that site, and work the cement formation near Picton, and machinery has been ordered for the purpose.

At Wakamarina, there is, I understand, a great demand among the sawmillers for bush for milling purposes.

The usual statistical returns are forwarded herewith.

I have, &c.,
T. SCOTT SMITH, Warden.

The Under-Secretary, Mines Department, Wellington.

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

SIR,— Warden's Office, Nelson, 19th May, 1904.

Pursuant to the request contained in your Circular No. 1 of the 23rd January last, I have the honour to enclose herewith the forms of return forwarded therewith duly filled up as far as information was available ; also, I submit the following report on the condition of the mining industry in the district of Karamea North for the year ended the 31st December, 1903.

Last year I had to report that the year had been unsatisfactory from a mining point of view ; this year it has been more so ; little if any fresh enterprise having been shown.

Dredging.—This branch of mining has so far been a complete failure. Five special dredging claims of an aggregate area of 323 acres were surrendered during the year. Out of the five dredges which were completed and in working-order at the beginning of the year, only one is now at work, and it is in fresh hands and on fresh ground. It is confidently expected that under the new management good results will be obtained.

Sluicing.—The Parapara Hydraulic Sluicing and Mining Company and the Slate River Sluicing Company are the principal companies at work.

Quartz-mining.—This is still confined to the Taitapu Estates, which will come under notice later on.

Alluvial Mining.—As reported last year, little is doing in this class of mining, but I hear some workings on private land at Puponga are giving good results.

Prospecting.—Prospecting has not been so active as last year, but eight licenses and two warrants representing 716 acres have been granted during the year.

Coal.—There are in existence six coal leases in the District of Collingwood, over a total area of 938 acres 3 roods 4 perches, but practically the only work done was done by the Puponga Coal and Gold Mining Company. This company has made great progress during the past year, and have now completed the wharf, which is connected with the mine by a railway all in working-order, and it is said that the output from the mine is likely to reach 2,000 tons per week before the end of the current year. The coal is in favour both for domestic and steam purposes. I am also informed that the company have completed the purchase of the adjoining leases, the property of the Cape Coal Company.

Iron.—As I anticipated last year, this year has seen Sir Alfred Cadman's application for a mineral lease over 920 acres at Parapara put in and provisionally granted for working the iron-deposits thereon. The terms of the lease provide for the expenditure of a considerable sum of money during the first year, so that soon work should be started and energetically proceeded with.

As this is my last report as Warden, it may be interesting to note more particularly what has been done in each centre of the district during the past year.

Collingwood.

Besides the prospecting areas taken up as already mentioned, one special quartz claim of 50 acres, 3 ordinary claims, 5 extended river claims over an area of 11 acres 2 roods, 5 water-race licenses, 5 tail-race licenses, 2 residence-sites, and 1 drainage area have been granted during the year.

Taitapu Gold Estates (Limited).—During the year operations on this property have been continued in the Anthill and Golden Ridge Mines, with a fair share of success. At the Anthill the installation of pumping and hauling gear to facilitate the working of lower levels than was hitherto possible has been completed, as also the lower tunnel of over 1,000 ft. in length, and of sufficient size for the passage of a horse drawing trucks of ore through the hill between this mine and the head of the aerial tram from the Golden Ridge Mine to the battery. This tunnel has been driven partly as a prospecting-work but chiefly to render unnecessary the heavy expense previously incurred in carting over the hill, and in conjunction with a water-balance raising the trucks some 25 ft. to reach the south end of the tunnel, which is practically on a level with the head of the aerial tramway. It has done its work very satisfactorily, reducing the total cost of working, including that of the battery, from about 7 dwt. to about 4 dwt. per ton of ore treated. The hauling and pumping plant consists of a Babcock and Wilcox multitubular boiler of 10-horse power, working a double cylinder hoist, and a Cameron pump, which have done excellent work; the pump easily keeping down the water which had previously stopped the deepening of the three winzes started in the No. 2 level of the mine. Winze No. 2 has now been sunk to a depth of 70 ft. from the level No. 2, the lowest workable, by adit from the surface, and a level has been driven southward to communicate with winze No. 2 to drain same and obtain proper circulation of air. This has just holed through, and stoping will now be begun on an ore-body averaging about 3 ft. in thickness, which has consistently shown payable prospects during the sinking of Winze No. 1. Pending stoping being done, and as the upper workings of the mine have been exhausted, the output from the Anthill section latterly has been small; but may now be expected to greatly improve. In consequence of the temporary cessation of stoping, it became necessary at the end of 1903 to discharge a large number of hands, including miners, truckers, bushmen, and sawyers, the number of employees being reduced from fifty, the average of the previous eight or nine months, to twenty, being all for whom there was work under the altered conditions. The lode discovered at Golden Ridge about Christmas, 1902, has been worked ever since with varying success, the ground being very patchy, both in regard to the size of the reef, which has more than once almost entirely disappeared, and as to the thickness of the stone. At present a face about 3 ft. in thickness and of very satisfactory quality is being worked. During the year, 1,705 oz. of gold of a value of £6,252 has been obtained from the two mines, and an average of forty-two men have been employed.

The Golden Blocks (Limited), Taitapu.—Though this mine has not come up to former years' productiveness, yet there has been a steady monthly output which the attorney for the company describes as satisfactory. The company have taken up a neighbouring area from the Taitapu Gold Estates (Limited), and in prospecting this new area have struck gold which promises well.

The Parapara Hydraulic Sluicing and Mining Company (Limited).—This company has been constantly working at what is known as the Glenmutchkin Face. The gold-bearing material lies immediately under the foot of a high steep hill, and when the wash is removed, extensive slips come down, the removal of the *débris* from which involves a great deal of labour. Had it not been for these extensive slips, the return from the face would have been very good.

The Slate River Sluicing Company.—This company have been energetically working to complete their dam. It is now about finished, and with the increased water-power, good results are sure to be obtained, as the value of their ground is now well ascertained.

Takaka.

During the year only six mining privileges were applied for and granted—1 special quartz claim, 1 tail-race, 2 protection certificates, and 2 prospecting warrants.

At the *Bubu* the Takaka Sluicing Company is working three shifts continuously, with good results.

At the *Anatoki* the Sleepy Flat Company has knocked off work for some time, but it is stated that operations may be shortly resumed.

The claim known as *Jackson's* has also remained idle during the year, but now I hear three men have taken it over, and are repairing the head-race and cleaning up the face for a start.

MOTUEKA, MOUNT ARTHUR TABLELAND.—I have nothing to report from this locality.

WANGAPEKA.—The dredge on this river has at length got to work, being worked with coal mined at their own mine in the vicinity.

THE SHERRY.—One claim on private land is being worked industriously, and with good results.

TADMOR and BATON are not now being worked.

I have. &c.,
WILSON HEAPS, Warden.

The Under-Secretary, Mines Department, Wellington.

Mr. Warden KENRICK, Greymouth, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,— Warden's Office, Greymouth, 29th March, 1904.

Herewith I have the honour to forward Statistical returns for the year ended December, 1903, also detailed reports on the several subdivisions of the mining district under my charge.

REEFTON-INANGAHUA DISTRICT.

Mr. E. W. Spencer, general manager for the Consolidated Goldfields of New Zealand (Limited), the Progress Mines of New Zealand (Limited), and the Welcome Gold-mining Company (Limited)—furnishes the following reports on the operations of the various companies under his control during the year 1903 :—

Consolidated Goldfields of New Zealand (Limited).—Wealth of Nations: Practically no development-work of any description has been carried out on this property during the period under review, owing to the conditions under which we are working. For the maximum capacity in depth of the old overshot water-wheel used for hoisting has been reached and developments in future will be conducted from the Energetic shaft. Stoping has been carried out in a general manner from the 350 ft. (No. 2) level down to the 800 ft. (No. 6) level producing 12,385 tons of quartz, which when crushed, yielded bullion to the value of £14,296 7s. 3d. by amalgamation, and concentrates to the value of £1,034 9s. 4d. were sold to the smelter. At the cyanide-works 8,645 tons of sands, representing 69·802 per cent. of the tonnage milled was treated, yielding bullion to the value of £5,061 3s. 11d. or 11s. 8·508d. per ton. Of this amount 2s. 11·047d. was absorbed in working-costs, leaving a profit per ton treated of 8s. 9·461d. The working-costs of this mine, amounting to 17s. 8·456d. per ton treated are made up as follows: Mining, 11s. 9·766d. per ton; Milling and concentrating, 2s. 6·507d. per ton; Cyaniding, 1s. 11·704d. per ton; Offices and general expenses, including bullion and assay charges, 1s. 4·479d. per ton. There have been no alterations in the surface equipment at this mine during the year 1903.

Energetic shaft: During the year the shaft has been sunk from a depth of 831 ft. to 1,369 ft., at which point the last set was placed in position on the 9th October. Since then the brace of the shaft has been raised a height of 8½ ft. which brings it up to the level of the permanent brace. Hence the shaft at present is actually 1,377·5 ft. deep. As soon as the shaft-sinking was finished, a start was made to open out for the new level (No. 7) at a point 125 ft. vertically below the bottom level (No. 6) of the Wealth of Nations. Here a chamber has been cut, and the crosscut at the end of 1903 was out 126 ft. from the shaft. It will probably have to go 220 ft. before striking the reef. On the surface very considerable alterations have been carried out and good headway made with the permanent equipment. An exterior-fired multitubular boiler has been erected and bricked in, the dimensions of which are as follows: Diameter of shell, 60 in., length, 16 ft., working-pressure, 140 lb. per square inch. A compressor 13 in. by 24 in. by Hirnant has also been erected, and it is intended to supply air for the rock-drills. A gallows-frame 37 ft. 6 in. in height has been erected for use with the large permanent winding-engine which is an 18 in. by 36 in. direct coupled Tangye girder winding-engine, the foundations for which are ready to receive the plant. The engine-house measures 45 ft. by 26 ft. 6 in. by 19 ft. 6 in. in height, whilst the boiler and compressor house measures 34 ft. by 22 ft. 6 in. by 15 ft. 6 in. in height. At the end of the year the new boiler was ready to connect up to the temporary hoist, thereby throwing the small boiler out of commission. Future operations at this shaft will be as follows: When the reef is encountered on No. 7 level it will be driven on in a southerly direction towards the present Wealth of Nations incline shaft, and as soon as possible the shaft will be continued on down another lift of 125 ft. to No. 8 level. The development-work throughout will, as far as possible, be conducted by rock-drills so as to hasten the developments; for the future of the Wealth of Nations Mine depends entirely upon the manner in which the next levels open up. Should they turn out well the surface reduction-works will have to be altered to suit.

Golden Fleece: During the period under review a large amount of development-work has been carried out, principally on levels Nos. 11 and 13 comprising driving and crosscutting 1,392 ft., raising and sinking 678 ft., besides which the main shaft was sunk from No. 12 to No. 13 level, and the necessary connections made. Stoping has been carried out in a very general manner from the following levels: 13, 12, 11, 7, 6, 5, 4, and 3, a very large amount of ground having been gone over to provide the tonnage milled. The quartz has maintained its characteristic irregularity during the year, the stone cutting out and coming in both horizontally and vertically with great rapidity. This necessitates the removal of a considerable quantity of blank ground to avoid missing small blocks of quartz. During 1903, 14,133 tons of quartz was crushed, yielding bullion to the value of £21,978 3s. 5d., besides which sulphurets to the value of £1,436 14s. 7d. was sold to the smelter. At the cyanide-works 9,580 tons of coarse sands was cyanided, representing 67·785 per cent. of the total crushed. This yielded bullion to the value of £3,381 19s. 6d.—of this amount 2s. 3·937d. per ton was absorbed in working-

costs, leaving a profit of 4s. 8·789d. per ton. The total working-cost for this property amounts to £1 5s. 7·942d. per ton milled The high cost being accounted for by the very mean width of quartz stoped. No alterations of importance have been made in the surface equipment of this mine during the year.

Progress Mines of New Zealand (Limited).—Development-work has been pushed in an energetic manner on the following levels Nos. 3, 4, 5, 6, 7, 8, 9, and 10, and resulted in the opening-up of large ore-bodies on Nos. 3, 4, 6, 7, and 9 levels in the eastern portion of the mine. The total footages driven are as follows: Driving and crosscutting 3,672 ft.; raising and sinking 927 ft.: total, 4,599 ft.. Stoping has been carried out from No. 3 level down to No. 9 in a very general manner, and the stopes have continued to yield quartz fully up to our expectations, as far as tonnage is concerned. In the eastern end of the mine large quantities of low-grade quartz cannot be worked at a profit under existing conditions, this material has to be used as filling. On No. 6 and No. 7 levels east, the continuation of our north-east ore-body has been located, and the stone on both levels extracted to ascertain the dimensions of the reef on these two levels. No. 9 east has also opened up a very valuable ore-body which was previously unknown. We have recently been trying to locate the same ore-body on No. 10 level and have partially succeeded. A diamond drill worked by compressed air has been at work for the last three months which has aided us in the search for dislocated ore-bodies. By this means we have traced two blocks of stone which previously we had not been able to find. On the surface the equipment at the mine has been increased by the addition of the second half of the 14 in. by 22 in. Rand air-compressor, converting the single into a duplex compressor. This alteration has greatly aided developments as there is now no difficulty in keeping the supply of air at 80 lb. pressure when six machines are running. The engine at the old shaft has been transferred on to a concrete bed and turned round so as to face the work. At the battery the only additions of importance have been at the cyanide-works where two new tanks 25 ft. diameter by 7 ft. high have been built, making the number of treatment-tanks in use up to twelve; besides this another tank is now in course of construction. An additional sump 20 ft. by 8 ft. has also been erected. This is used for storing strong solution. The cyanide-house has been enlarged to cover over the tanks erected, and a small shed placed over the new sump. The whole of the company's plant has been maintained in good order, and the output of the mine exceeds that of any previous year. The year's work resulted in the mining, transportation, and reduction of 57,114 tons of quartz, which yielded by amalgamation 21,298 oz. 15 dwt. 22 gr. of gold, valued at £88,738 12s. 11d. 1,060 tons of concentrates was treated, yielding 2,866 oz. 1 dwt. 13 gr. of gold, valued at £11,851 15s. 4d. At the cyanide-works 26,547 tons of coarse battery sand has been treated, yielding 3,181 oz. 6 dwt. 19 gr. of very base bullion, valued at £7,769 11s. 1d. The working-costs amount to 2s. 4·704d. and the profit to 3s. 5·537d. per ton treated, making the yield equal to 5s. 10·241d. During the year a small experimental shipment of 13 tons of roasted slimes forwarded to the smelter realised £142 14s. 8d. A general summary of the aggregate working-cost, yield, and resulting profit in milling 57,114 tons, and cyaniding 26,647 tons during the year is as follows: Total working-cost, exclusive of capital and development expenditure—Incurred in mining, milling, and chlorinating, including bullion charges and office expenses, £45,971 2s. 9d., or 16s. 1·176d. per ton milled; cyaniding, £3,175 1s. 4d., or 1s. 1·342d. per ton milled: total, £49,146 4s. 1d.,or 17s. 2·518d. per ton milled. Profit—Mining, transportation, milling, concentrating and chlorination works, including office expenses and bullion charges, £54,619 5s. 6d., or 19s. 1·517d. per ton milled; cyaniding, £4,594 9s. 9d., or 1s. 7·307d. per ton milled: total, £59,213 15s. 3d., or £1 0s. 8·824d. per ton milled. Summary—Total working-cost, £49,146 4s. 1d., or 17s. 2·518d. per ton milled; profit, £59,213 15s. 3d., or £1 os. 8.824d. per ton milled: yield, £108,359 19s. 4d., or £1 17s. 11·342d. per ton milled. On capital expenditure £8,115 2s. has been spent during the year; of this amount £6,508 16s. 7d. was incurred directly in mine-development. The milling time during 1903 was very good, and would have been better but for a serious break in the water-race which accounted for 4 days 8 hours during July. This was the only break of any importance. The total number of days the mill ran was equal to the theoretical time with the exception of 12·62 days. This loss of time represents the total delays caused by the monthly clean-ups, daily scrapes, water-race breakages, and incidental stoppages. A successful and prosperous year for 1904 is confidently looked forward to, when the same policy will be pursued as heretofore, with the exception of the mine-development which will be pushed even more energetically than during the period under review.

Welcome Gold-mining Company (Limited).—Operations during the year were confined to stoping the quartz exposed above the low-level tunnel, Specimen Hill, and the No. 5 level Welcome, besides which a winze was sunk from the intermediate level a distance of 115 ft. connecting it to the low level. This winze was put down to endeavour to locate the position of the northern end of the stone on the low level. During the first nine and a half months of the year the company mined and milled 1,445 tons of quartz, which yielded 546 oz. 5 dwt. 21 gr. of gold, valued at £2,247 3s. 4d. The coarse sands from which, amounting to 1,044 tons, were cyanided and yielded gold to the value of £1,089 8s. 9d. During October the whole plant and mine were let on tribute to O'Leary and party who, up to the end of the year, had mined and milled 185 tons of quartz for a return of 271 oz. 8 dwt. 21 gr., valued at £1,097 7s. The sands were run away to the cyanide plant and were still under treatment at the end of the year. During the year the Welcome Company was absorbed by the parent company, the Consolidated Goldfields of New Zealand (Limited), so that the former has now ceased to exist. In the new year the tributers will continue to work the mine as heretofore, and run the battery the necessary time to reduce the quartz when mined.

Last Chance.—Messrs. James Morris and Alexander Fleming, the owners of this mine, report that during the year 1903 the level has been driven 120 ft., and 40 ft. has been stoped from level to level. The claim is worked by only two men.

Inglewood-Victoria.—Of this mine's operations during the year no report is available. It is privately owned.

Kirwan's Reward Gold-mining Company (Limited).—Mr. B. P. McMahon, manager of the company, supplies the following report: "During the past year 4,814 tons of quartz-rubble have been crushed, yielding 1,791 oz. 5 dwt. 6 gr. of the value of £7,131 9s. 1d. Work at the mine was stopped by a very heavy fall of snow on the 20th June, and was not resumed until the middle of September. The stone is obtained by open quarrying, and consists of quartz mixed with sandstone boulders, and at times a considerable amount of overburden has to be removed."

Big River Gold-mining Company (Limited).—Mr. Lee, manager for the company, reports as follows: "Operations were commenced at the beginning of the year by driving upon the small gold-bearing leader that was crossed in No. 7 level, about 340 ft. from the main shaft. Branch drives to the south-east and north-west respectively from No. 7 level, were extended along the course of this line of reef. The lode was, however, very irregular in size, ranging in places from 1 ft. to 2 ft. 6 in. in thickness, but with walls about 4 ft. to 5 ft. apart carrying a splendid reef-track. After about 150 ft. of driving had been completed without a block of stone of permanent value being discovered, work was stopped in these drives, and the extension of No. 7 level to the north was continued for an additional 120 ft., but without payable result. It was then decided to construct an uprise to No. 6 level, so that an intermediate level between Nos. 6 and 7 could be driven out under the old reef in No. 6, and thus greatly facilitate the tracing of that stone down to the low level; besides such a connection became imperative for the proper ventilation of the mine. 167 ft. of rising and 60 ft. of crosscutting from No. 6 to meet the top of uprise were completed, and the two drives thus connected. Halfway up the rise the intermediate level was commenced, and after 40 ft. had been driven, a reef carrying very good gold was cut, which increased to 7 ft. in width, and continued for a distance of about 40 ft. Stoping operations were at once started, and the reef has maintained an average width of 5 ft. to the present stope. This lode is striking back south, and if it continues, will go up into maiden country east of all levels previously worked. As soon as the course of the reef was ascertained in the intermediate level, No. 7 was extended for the purpose of cutting it. After driving about 25 ft. a reef carrying very good gold was struck, and has been proved to live a distance of 57 ft. with an average width of 4 ft. Stoping has also been commenced here, and the reef appears to be striking in the same direction as the reef in the intermediate; but the stone does not possess the same characteristics as the latter, and judging from its present underlay, it will take it into the hanging-wall side of the intermediate level. This however can only be determined when stoping operations are more advanced, but from the present indications, they look to be two separate reefs. A parcel of 340 tons of stone from the two reefs, which may be considered an average sample, gave a return of 454 oz. 2 dwt. of melted gold, valued at £1,836 18s. 10d., enabling liabilities and current expenses amounting to over £600 to be paid off, and a dividend of 1s. per share (equal to £1,200) to be declared."

The New Inkerman Mines (Limited).—Mr. Norman M. Dudgeon supplies the following report: "During the year the following development-work has been carried out: Driving, 40 ft.; sinking, 72 ft.; rising, 119 ft.; crosscutting 6 ft., making a total of 237 ft. Stoping was commenced in April last, and during the year 5,167 tons of stone has been broken out and delivered at the battery, 3,512 tons being stoped from below the main level, and the balance, 1,655 tons from above. Battery: The company's fifteen-stamp battery which has during the year been thoroughly overhauled and put in good working-order, commenced crushing in June, and has crushed 5,247 tons for a return by amalgamation of 1,020 oz. 18 dwt. 3 gr. gold, value £4,086 5s. 11d. A cyanide plant, consisting of four treatment-vats 18 ft. 6 in. in diameter by 6 ft. deep, and two sumps 18 ft. 6 in. diameter by 6 ft. deep, and 15 ft. diameter by 5 ft. deep, was erected, and 2,458 tons of coarse sand has been treated during the year for a return of 351 oz. 12 dwt. 9 gr. bullion, value £1,165 16s. A slimes plant, consisting of six canvas-covered tables, having a superficial area of 960 square feet, and three small settling-tanks has been erected. Twenty tons of slimes and 50 tons of concentrates have been recovered during the year, and will be shipped for treatment. Future operations: It is the present intention of the company to continue the main level west for about 350 ft., with the object of intersecting the continuation of a large outcrop known as the 'big blow.'"

Keep-it-Dark Quartz-mining Company (Limited).—Mr. Hindmarsh, manager of the company, reports as follows: "Mine Department: The year's work has consisted chiefly of stoping out quartz from No. 4 level. The reef in this level, so far as it has been worked up, has not varied much in size. Sometimes a slide of mullock displaces part of the lode and causes a falling-off in the quality. Eleven stopes have been worked up. The crosscut from No. 5 chamber, which was in 120 ft. at the end of last year, has been driven 275 ft., the lode being intersected at that distance, being 300 ft. from main shaft. A block of stone, carrying payable gold, was met with at 252 ft. from shaft. This stone is 30 ft. long and is solid underfoot, but is broken on the top. Up to the present very little work has been done on it, as it is supposed to be the top of a new block of stone making under the level. A winze from No. 4 level was sunk 93 ft., and a rise from No. 5 level was put up 72 ft. to connect. This connection was made about the beginning of November. The reef which has so far been disclosed in No. 5 level is of very good quality, but up to the present time is not proved to be of large extent. The main portion of the reef has not yet been cut in the level. There are indications at top of rise, 70 ft. up from level, that a large part of the lode has taken a set-off into the footwall. Some time yet will be required before the extent of the lode in this level can be determined. During the year 12,568 tons of quartz has been raised from the mine and sent to the battery. The cost of same including all expenditure in connection with the mine and winding plant being £7,567 2s. 7d., an average cost of 12s. 0½d. per ton. It has been

decided to sink the main shaft 300 ft. deeper and thus open up two other levels on the reef which is at present being worked. The shaft will then be a sufficient depth to give one level beneath the No. 7 level on the old reef, situate about 500 ft. north of the present workings. Tenders were invited and a contract let to sink the shaft 300 ft. and cut out and complete two chambers. The contractors commenced work on the 24th November, and up to the 24th December sank and timbered up 50 ft. Battery department: The battery and plant, head-race and tail-race have been maintained in good condition. The new cam-shaft and ten new cams have recently been put on, the battery being now in good order. 12,568 tons has been crushed, the yield of gold being 3,639 oz. 1 dwt. 6 gr., averaging nearly 5 dwt. 19 gr. per ton. The total cost of the year's crushing which includes all expenditure in connection with the crushing plant, and upkeep of head-race and tail-race amounts to £1,464 14s. 1d., being a small fraction under 2s. 4d. per ton. Cyanide department: The amount of gold extracted from the tailings has been much better than it was in 1902. This may partly be accounted for by the absence of antimony in the ore in large quantities. A little antimony does sometimes yet show in the slimes and bullion when melted, but not in sufficient quantity to have an injurious effect. The bullion obtained for the year amounted to 1,643 oz. 5 dwt. 18 gr., valued at £5,697 9s. 5d. This gives an extraction of 9s. 0¾d. per ton on the gross tonnage crushed. The cost of treatment including labour and all material used and consumed amounts to £2,316 3s. 5d., being 3s. 8¼d. per ton; this leaves a profit of 5s. 4½d. per ton on the total tonnage. One shipment of about 40 tons of sulphides which are caught from the overflow of the tanks while filling, was sent to Melbourne for treatment, and notwithstanding the heavy expenses of cartage, railage, and ship's freight, and charge for treatment, a fair percentage of profit was obtained. The spread of canvas tables has recently been increased to more than double the extent, so that more sulphides will accumulate in future. The total value of gold won during the year was £20,473 2s. 2d., out of which dividends have been paid amounting to £8,750. From the inception of the company, 145 dividends have been paid amounting to £132,166 13s. 4d."

Mr. T. Hubert Lee, manager of the Golden Lead, Ulster Industry, and New Scotia Companies, reports thereon as follows:—

Golden Lead Gold-mining Company (Limited).—Operations during the year have been confined to prospecting in Nos. 3 and 4 levels with a small number of men. In No. 3 level a small gold-bearing leader of stone was followed for some 120 ft., but it could not be traced down to No. 4. Eleven tons of stone were stoped over No. 3 level on the small leader and crushed at the New Scotia battery, with the result of 16 oz. of melted gold, valued at £65. In the stopes the stone became poor and broken; work was therefore discontinued. The company has now been wound up and amalgamated with an adjoining mine owned by the Industry Gold-mining Company (Limited). Both mines are now being worked by the new company, which is called the United Gold-mines (Limited)."

Ulster Company.—This mine is situate about half a mile to the north of and in a line with the Golden Fleece line of reef, and has been prospected continuously throughout the year by a small local prospecting syndicate. A tunnel was driven in under the reef-outcrop on the surface, for 100 ft., at which point the reef was cut 2 ft. 6 in. wide, carrying highly payable gold. This stone was then followed for 110 ft., and is now about 1 ft. 6 in. wide in the face, with greatly increased values, gold being visible in almost every piece of stone. Operations are now suspended temporarily, as the owners have floated the concern into a public company with sufficient capital to thoroughly develop and equip it with plant, &c.

Industry Gold-mining Company (Limited).—This company after a period of unsuccessful prospecting in 1902 and temporarily stopping work, resumed operations early in 1903. In the No. 1 level good gold-bearing stone was cut in a branch drive to the west, and then followed down in a winze for some 67 ft., the reef being from 3 ft. to 4 ft. wide. The old Exchange level was then opened up, as it offered a better prospect of proving the reef lower down. After extending this level a short distance, the lode was cut, and then followed on to the winze above referred to. A trial-crushing of 100 tons of stone taken generally from all the workings on the reef, was carted to the New Scotia battery and crushed. The yield was 56 oz. 15 dwt. retorted gold, valued at £227 14s. 2d. The tailings were treated by cyanide under the supervision of Mr. J. W. Lee of the New Inkerman Mines (Limited), and gave the very handsome return of 74 oz. 12 dwt. 6 gr. of bullion, valued at £242 9s. 9d., or £3 5s. per ounce. The yields thus resulted in values of £2 5s. 6d. and £2 8s. 6d. per ton being obtained from the battery and cyanide respectively. At this stage, as the company had no crushing-plant, proposals were made for an amalgamation with an adjoining mine, the Golden Lead, which has a crushing-mill of ten heads, aerial line, &c., in Deep Creek, and is within easy reach of the Industry Mine. These proposals were accepted, so the two companies were wound up and re-formed under the title of the United Gold-mines (Limited). The new company is now engaged in proving the reef underfoot from the Exchange level, so that the aerial line to connect with the battery can be removed to the best position for the future working of the mine.

New Scotia Gold-mining Company (Limited).—In this mine operations have been carried on extensively, but, so far, with indifferent results. The 200 ft. level was extended through to the Gallant section of the property, and up-rise completed between that level and the winze, that was sunk in the Gallant tunnel on the lode. This established connection between those two points, and thus furnished excellent ventilation, besides enabling the Gallant lode to be worked on a larger scale. After this, the battery and cyanide plant were run on stone produced from that lode. The results were as follows: Battery—719 tons crushed for a yield of 118 oz. 3 dwt. 6 gr. melted gold, valued at £465 11s. 8d. Cyanide—600 tons of tailings was treated for 35 oz. 14 dwt. 12 gr. of bullion, valued at £73 1s. 1d. These values being unpayable, all work on this reef was stopped, and crushing ceased. In the intermediate level

that was driven between the 200 ft. level and the Gallant level, a reef from 6 ft. to 10 ft. wide was followed north for a good distance, but values were too poor for working, though it is possible a payable chute of gold may be cut in it if persevered with. A winze was then started on a block of stone almost near the surface known as Martin's reef. This lies to the west of the Gallant line of reef, and was formerly worked to a small extent by the old proprietors, two small crushings from it producing values equal to 7 dwt. and 12 dwt. per ton respectively, by the ordinary battery process only. This winze was sunk for 74 ft., when work had to be stopped owing to a large influx of water. The reef was from 1½ ft. to 2 ft. wide throughout, and was improving in appearance and quality as sinking proceeded, the last work done in the bottom producing good-grade stone. A trial-crushing of 25 tons of stone was put through for the payable yield of 7 oz. 16 dwt. of gold, valued at £30 5s. 10d., in addition to which the tailings showed an assay value of 5 dwt. 5 gr. per ton. The company intend removing the winding-plant and engine from the old Drake main shaft to this winze, with a view of sinking same and testing the reef further.

Dredging Claims.

A 1 Gold-dredging Company (Limited).—Mr. Rollit, of Christchurch, supplies the following report: "In December, 1901, the A 1 dredge was working up the claim with poor results, and the bottom rising, so that after working until March in that direction with no better results attained, the dredge was turned and worked to the bottom of the claim, where much better gold was found. The dredge will not be kept working on the bottom of the claim. The pontoons, which were built of red pine, have only been in work two and a half years, and are found to be in a bad state of decay, so much so that the directors are endeavouring to procure new pontoons of hard wood. This means an expenditure of at least £1,500, so there seems no prospect of the company paying a dividend this year unless the gold greatly improves. Most of she shares are held in Christchurch. The company has paid five dividends of 1s. each since it started operations, and has paid off a debt of £1,000, which was incurred before the dredge started work."

Reeves Proprietary Gold-dredging Company (Limited).—Mr. H. A. Bruce, of Christchurch, reports as follows: "It is to be regretted that the results of 1903 have not been so successful as in the preceding year, principally owing to time being lost in making additions to the old dredge; at the end of 1902 a quantity of gear was purchased from the Totara dredge, and this has been placed on the old dredge. Three months were occupied in making these alterations and strengthening the pontoons to carry the extra weight, the change of gear rendering the machine much stronger and more serviceable for the amount of work it has to perform, and the result is shown in the increase in the returns since the alterations. The amount of gold won for the past year was 651 oz. 10 dwt. 12 gr., value, £2,542 15s. 4d., against 974 oz. 16 dwt. 18 gr., value, £3,891 19s. 11d. for the previous year. During the year, the directors purchased the Merrimac dredge, an up-to-date machine, which is now in course of erection at the lower end of the claim. This dredge is practically new, and originally costing between £7,000 and £8,000, was purchased as it stood on the Kawarau River for the sum of £900, and to meet the cost of elevators, dismantling, removal to the claim, and re-erection, debentures were issued for the sum of £2,500, all being taken up by the shareholders in the company. The sum so raised, with the money in hand, augmented by the earnings of the present dredge, will, it is estimated, erect and equip the new dredge, and it is expected to commence operations about the beginning of February. It is anticipated that to complete the existing contracts for erection of the new dredge and start work, will require about £650 more, but ordinary returns from the present dredge during the next few months will, it is hoped, enable the company to meet contingent liabilities."

Greymouth Lagoons Gold-dredging Company (Limited).—Mr. G. S. Cray, of Greymouth, supplies the following report: "The dredge has been working during the year on the right-hand branch of Red Jack's Creek (Blackwater). Efficient work has been hampered through the ladder breaking, involving a stoppage of nine weeks, and heavy cost for repairs; stoppage of work also occurring through the failure of water-supply during the frosty weather last winter—six weeks being lost on this account. The ground where the dredge has been working has been patchy, returns varying from 10 oz. to 50 oz. per week, but owing to the time lost, the average has barely covered working-cost. At present the dredge is engaged working its way back to the locality where work was started, nearer Blackwater River. It will take four or five months' work to reach the ancient bed of the river, and it is believed that returns will then be satisfactory, and this opinion is based on the returns now being obtained by the Blackwater River Company's dredge, which is working an adjoining claim."

Alluvial Mining.

A very small amount of work in this branch of the industry is now being carried on.

At Blackwater about fifty Chinese are employed sluicing shallow ground, while about thirty European miners are engaged in driving and blocking out in the terraces. No new ground has been opened up.

At Boatman's (Capleston) a number of men are still at work sluicing and driving.

A few miners are to be found at Antonio's, Snowy, and Soldiers Creek, but the main industry of the district is quartz-mining.

A small cement-crushing battery is being worked at Lankeys, with very fair results.

Statement showing the Comparative Returns from the Quartz Mines in the Reefton District, from the 1st April, 1880, to the 31st March, 1901, and a similar Return for the Years ending 31st December, 1901, 1902, 1903.

Years ending.	Calls made.	Dividends declared.	Quartz crushed.	Yield of Gold.	Value of Yield.
	£ s. d.	£	Tons.	Qr. dwt. gr.	£ s. d.
31st March, 1881	10,218 17 6	19,650	25,926	17,597 14 10	68,630 13 10
,, 1882	25,504 3 4	37,643	14,894	20,154 0 0	78,600 12 0
,, 1883	64,345 0 0	32,600	18,928	19,194 0 0	74,856 12 0
,, 1884	49,456 0 0	16,500	23,433	16,547 0 0	64,533 6 0
,, 1885	29,333 0 0	34,100	34,349	23,997 0 0	93,588 6 0
,, 1886	24,565 0 0	14,500	27,198	14,591 0 0	56,904 18 0
,, 1887	21,596 0 0	33,450	23,930	21,143 0 0	83,171 15 5
,, 1888	30,432 0 0	17,550	24,403	16,775 0 0	66,030 11 5
,, 1889	38,919 0 0	16,688	28,564	18,663 0 0	72,720 18 0
,, 1890	27,531 0 0	18,250	32,394	17,780 0 0	69,676 12 1
,, 1891	20,404 0 0	27,325	39,643	23,347 0 0	91,998 8 10
,, 1892	25,956 0 0	30,743	35,562	23,390 0 0	95,885 5 1
,, 1893	18,800 0 0	16,900	37,693	20,171 0 0	80,894 5 1
,, 1894	14,350 0 0	18,832	34,518	18,413 0 0	73,752 14 11
,, 1895	10,153 0 0	11,012	26,602	13,426 10 0	53,509 5 1
,, 1896	8,418 0 0	25,925	29,816	22,025 0 0	87,935 18 4
,, 1897	9,033 6 8	4,900	13,270	8,365 4 20	33,824 7 1
,, 1898	7,859 3 4	50	9,751	4,266 7 1	18,253 7 3
,, 1899	5,920 6 8	900	42,305	21,487 18 15	87,587 1 0
,, 1900	10,747 8 9	47,050	58,277	26,693 3 18	108,455 17 8
,, 1901	5,826 9 7	35,300	82,618	33,979 5 5	134,557 7 11
31st December, 1901	6,233 6 8	58,199	97,870	46,066 16 12	186,719 6 7
,, 1902	6,900 0 0	48,475	98,485	46,561 9 17	188,758 2 5
,, 1903	4,587 0 0	57,641	109,571	58,840 6 15	195,468 16 10

Gold-yield, Reefton District for the Year 1903.

Name of Company.	Calls.	Dividends.	Tons treated.	Yield of Gold.	Value of Gold.
	£	£		Oz. dwt. gr.	£ s. d.
Progress Mines of New Zealand (Limited) ..	Nil	34,375	57,114	27,346 4 6	108,217 4 8
Consolidated Goldfields of New Zealand (Limited)	,,	11,250	..	..	..
(1) Golden Fleece	,,	Nil	14,133	6,384 3 9	26,790 17 8
(2) Wealth of Nations	,,	,,	12,385	4,819 14 8	20,422 5 8
Welcome Gold-mining Company (Limited) ..	,,	,,	1,611	1,143 12 8	4,431 19 1
Big River Gold-mining Company (Limited)	1,500	1,166	340	453 2 0	1,836 18 10
Kirwan's Reward Gold-mining Company (Limited)	Nil	2,100	4,814	1,791 5 6	7,131 9 1
Keep-it-Dark Quartz-mining Company (Limited)	,,	8,750	12,568	5,282 7 0	20,473 2 2
New Inkerman Mines (Limited)	,,	Nil	5,247	1,372 10 12	5,252 1 1
New Scotia Gold-mining Company (Limited)	1,837	,,	1,344	162 7 14	568 18 7
Golden Lead Gold-mining Company (Limited)	550	,,	Nil	Nil	Nil
Industry Gold-mining Company (Limited) ..	700	,,	,,	,,	,,
Last Chance (Private)	Nil	..	15	85 0 0	344 0 0
Dredging Companies					
A. 1 Gold-dredging Company (Limited) ..	Nil	850	..	998 16 0	4,002 17 10
Boatman's Creek Gold-dredging Company (Limited)	6,120	Nil	..	226 0 0	900 7 6
Reeves Proprietary Gold-dredging Company Limited)	Nil	,,	..	653 16 12	2,549 17 10
Greymouth Lagoons Gold-dredging Company (Limited)	,,	,,	..	777 14 8	3,149 15 5
Blackwater River Gold-dredging Company (Limited)	,,	1,421	..	1,280 17 10	5,194 15 5
Other Alluvial Gold.					
Sold to Bank of New Zealand	..	..	..	1,133 14 15	4,432 14 6
Sold to National Bank of New Zealand (Limited)	..	..	..	1,807 4 9	7,043 1 8
Totals	10,707	59,912	109,571	55,718 9 21	222,742 7 0

Lyell and Murchison.

The commencement of the year saw seven dredges working on the Buller River between Lyell and Westport, and one on the Upper Buller; but with the exception of about two, or perhaps three, the results were extremely disappointing. The Old Diggings dredge (formerly Cocksparrow) was purchased by a party of four workmen, and during the year has been working in the Buller at Berlins. No returns have been published but the results obtained are believed to be satisfactory. The returns from the Rocklands dredge—which is working a couple of miles above the old diggings—have been very poor, and the same remark applies to the Premier dredge, which is working about a mile below the Inangahua Junction. The Welcome dredge which has been working near the mouth of the Inangahua has also been on poor ground during the year. The Buller Junction dredge has done very well indeed, 1,434 oz. 6 dwt. of gold having been obtained, and a sum of £1,875 paid in dividends during the year. The Mokoia, which is working two miles further up, has also proved highly payable. The Feddersen dredge, which commenced operations in January, 1903, only worked for a few months when the company decided to close down as the dredge was not paying working-expenses. Since then the dredge has been left high and dry by a flood, and has remained stranded for nearly six months. On the upper Buller the only dredge at work at the beginning of the year was the Fern Flat Proprietary's, but the returns were so poor that the company closed down, and afterwards let the dredge on tribute to a party of workmen. These men also were compelled to cease operations owing to the poorness of the ground. On the Matakitaki River two dredges have been working during the year—the Kohikohi and the Amikitia, but the returns from both of them have been a long way from payable, and the Amikitia Company have now closed down. The Bellevue Company are engaged building a dredge on their claim on the Matakitaki four miles from Murchison, and expect to get a start in about two months.

Alluvial.

Very little attention has been paid to sluicing. In the Murchison and Matakitaki districts a few individual miners just manage to make a living. On the Buller, alluvial mining is mostly confined to a few Chinamen. At Newton Flat the Newton River Hydraulic Sluicing Company (formerly the Neville and Perkins Company) are working on a large scale and during the last few months have been obtaining splendid returns. Four miles below Lyell the Lyell Hydraulic Sluicing Company of Wellington have applied for two 100-acre claims, and during the year have brought in ten heads of water from Pensinie's Creek, and have done a little sluicing; but so far the results obtained have been very poor.

Quartz.

During the early part of the year the Alpine Extended Company finished the sinking of the main shaft and commenced driving a new level (No. 12) in the hope of picking up the good stone which went underfoot in No. 11. So far nothing permanent has been obtained, although some small blocks of splendid stone have been passed through. At the Eight Mile—four miles beyond the Alpine—Kelly and party have been engaged working a rich leader on the old United Italy lease. The clean-up at Christmas gave the splendid return of a little over £9 per week per man for five months' work, clear of all expenses. At New Creek, near Lyell, an Auckland syndicate have had several men engaged in driving. The syndicate have an outcrop of very rich stone, but so far have been unable to pick it up in the drive, although small bodies of good stone have been met with.

About the usual amount of business was transacted in the Warden's Court at Lyell, the most noticeable feature being the number of suits entered—forty-eight. No doubt the greater part of these were friendly suits to keep titles good where the labour clauses were not being complied with.

Westport District.

Addison's.

Willikin and Party.—During the past year this party constructed a long tramway to the northern end of their claim, and repaired the battery, and have since been crushing cement of a payable nature.

McCann and Party have had some encouraging returns during the year with every prospect of continuance for a considerable time.

Hallagan and Party have not had a very successful year, the returns not being up to expectation.

Gould and Party have been sluicing steadily with fair results, and having now secured ample fall for their tailings, they should have a long term of remunerative work before them.

Neill and Party have put through a large quantity of fairly payable wash. They were put to heavy expense in constructing a new road to be used in place of a road crossing their claim which they intend to sluice away.

Carmody and Party's claim is one of the oldest and most prosperous at Addison's. Their new water balance and other improvements are finished, and they are putting through large quantities of payable dirt. The ground is heavy, stony, and deep, but having a splendid water-supply, they are able to deal with it in a satisfactory manner.

The Venture Cement-crushing Party have had a good year, the returns generally being fully up to a payable standard.

The Addison's Long Tunnel Gold-mining Company (Limited).—This company was sluicing on the Outside or Stony lead with unsatisfactory results. The shovel prospects were first-class, but the gold proving exceptionally light caused sluicing operations to be disappointing. The company's tail-race

has been extended to the Inside lead and washing started there last November. The returns at once showed a decided improvement, and should the ground not become hard or cemented, the company will probably enjoy a richly deserved spell of prosperity.

The Shamrock and Golden Sand Claims have not been worked during the year; and the Virgin Flat Company after a long struggle has shut down temporarily. There is a splendid plant on the ground, an ample water-supply, but apparently up to the present the wash-dirt has not been found to be payable.

Waimangaroa.

The Britannia Gold-mining Company (Limited).—Several small blocks of stone were met in levels 4 and 5, but the quality was not very good. However, the operations for the past year paid all expenses, including the cost of an additional water-supply, and better stone has been recently cut in No. 5 level. There is every indication that the mine will give better returns in the immediate future.

Stony Creek Gold-mining Company (Limited).—This company has not crushed any stone during the year. The working-reef cut out and only prospecting-work has been done since. Several small parties are working on the banks and in the bed of the Waimangaroa River. As they stay on year after year, it is evident that they must at least be making a good living. All dredging operations in this neighbourhood have been discontinued. The dredges have been sold, and the claims abandoned or protected.

Mokihinui.

The Red Queen Gold-mining Company (Limited).—After going to heavy expense in providing a quartz-crushing plant with all accessories, the claim has been closed down and the company is in liquidation. The stone taken out was fairly rich, but the reef is so small and the faults so many, that returns did not cover working-expenses.

All dredging claims taken up in the Mokihinui River and its tributaries have been abandoned.

Old Diggings.

There are now only three small parties of miners working on the banks of the Buller River at this old-established field. The wash is evidently rather poor, because large quantities are being removed by hydraulic sluicing, and yet the parties are reported to be barely making wages.

Charleston.

Back Lead.—This famous lead was at one time the best-paying field in the Charleston district, but at present it supports only eight parties of miners, five of which are ground-sluicing, and three crushing cement. These parties have been continuously employed during the year, and have worked a considerable area, but the returns are far from equal to those of former years.

Powell's Claim at the Nine-mile Beach has been steadily worked, and it is understood that the returns have been uniformly good.

The beachcombers in the same localty—or the greater number of them—have had a favourable year.

The "Fly-catchers" in Darkie's Creek still keep their tables collecting fine gold as in the past and their returns depend altogether upon the quantity and quality of the tailings sluiced into the creek above them.

The Charleston Beach Sluicing Company at the mouth of the Totara River have constructed a race and expect to be sluicing shortly. The claim will be worked practically in the same way as Powell's, and it is to be hoped it will prove equally payable.

The mining population of Charleston is decreasing year by year, and, unless large sums of money are expended in working auriferous ground where water is obtainable only by considerable outlay of capital, the district will in the course of time cease to be a gold-mining centre.

Brown's Terrace.—Two parties only are now working here both crushing cement and getting fair returns. There is a large area of ground in this neighbourhood which is considered payable, but the heavy outlay required to provide a sufficient water-supply prevents working-miners from taking it up.

Croninville.

The small parties of miners who have worked in this locality for many years past have now suspended operations, having recently sold their mining privileges to the Charleston Beach-sluicing Company.

AHAURA DISTRICT.

Half-ounce and Duffer's Creeks.—There has been no change in this district during the last twelve months. The population remains about the same. Two dredges are working in the locality; one has been working for some time with moderate returns, the other has only lately started.

Noble's and Mosquito Creek.—The population in this district remains about the same. No new ground has been opened up. Two dredges are working in Mosquito Creek. One, the Mosquito, has been at work for about fifteen months, obtaining on an average of between 40 oz. and 50 oz. of gold per week, and since starting has paid £1,500 in dividends. The Mosquito No 2 dredge started work in June last, but so far the returns have been only moderate.

Orwell Creek.—The population has fallen away considerably in this locality during the year. The two dredges that were at work have closed down. One has been removed, while the other has been sold,

and there is a prospect of its starting again No new ground has been opened up. There is a large area of sluicing-ground in this locality, but to bring water on to it would require a large outlay in race-construction.

Ahaura and North Bank of Ahaura River.—Sluicing is carried on to a considerable extent on the north bank of the river. Scarcity of water is here also a considerable drawback, as in most cases it has to be bought. One dredge is working in Ahaura River. The returns are only moderate on account the incapability of the dredge to treat the deep ground.

Nelson Creek.—The population in this district has increased considerably. Five dredges are now at work in the locality, and all of them get returns which leave a fair margin of profit. The Nelson Creek dredge has proved about the most successful one on the Coast, while the Pactolus Company have been able to build a second dredge out of the profits derived from the first, and has also paid £2,500 in dividends. A large area of ground in this locality is suitable for sluicing should water be available on the high levels.

No Town.—In this locality a decrease in the population is also noticed. Very little sluicing is carried on. One dredge is working and two are in course of construction. The No Town Company's dredge has given consistent returns for over eighteen months past, and has paid £9,000 in dividends since commencing dredging operations. The Bignell's No Town, and No Town No. 2 dredges ought to be ready to commence operations shortly after the beginning of the new year.

Moonlight.—The population in this locality remains about the same. The Shetland Terrace Company has commenced sluicing, and although the supply of water is not sufficient for good work, it will at least give the company some knowledge as to the quality of their ground. If this is proved satisfactory, the company will extend their water-race and tap the main creek above the forks. One dredge is working in Moonlight Creek with very fair returns, and one has closed down.

Blackball.—The number of alluvial miners in this locality has decreased considerably. Not more than eight or nine men are now working at upper Blackball, and a few continue to fossick about Lindgren's Terrace. The population about the Township of Blackball remains about the same, and is composed mostly of the Blackball Coal Company's employees.

Greymouth District.

Comparatively speaking there has been very little alluvial mining carried on in this part of my district. In and around Rutherglen, Marsden, Dunganville, and Maori Gully, the population of alluvial miners has been much the same for some years past, and consists largely of Chinese. There are now no large sluicing companies working in any part of the district. The Waiwhero Company went into liquidation during the year, whilst the Nine-mile Company has ceased operations for some months past. Extensive sluicing operations are being carried on in the Barrytown district, with, I understand, very satisfactory results by Mr. Andrew McKay, but last year the scarcity of water, due to the dry season, greatly impeded much progress being made. The dredging companies owning properties in this part of the district are commented upon generally under the heading of "Dredging."

Dredging.

The appended list of dredging companies which were in active operation during the year ended the 31st December, 1903, shows in a concise form the gross yield of gold from thirty-four dredges in my district, which does not extend south of the Teremakau River, and consequently does not include several West Coast dredges working beyond that limit.

Three companies mentioned in the list—viz., Boatman's Creek, Golden United, and Moonlight, did not commence dredging operations till late in the year, and sufficient time has not elapsed to admit of a fair idea being formed concerning the value of properties being worked by these companies.

The list includes the following dredges which were in active operation in the early part of the year, but ceased work during the year owing to returns proving unpayable: Erickson's Reward, Feddersen's, Fern Flat, Maori King, New Red Jack's, and Shellback Companies. These are all in course of liquidation or reconstruction.

The undermentioned companies which owned working dredges in 1902 have been finally wound up during the year ending 1903. Two or three of these companies were working during the early part of the year under review, but no returns have been furnished showing the gold obtained, and consequently the actual figures must be omitted from the list: Garibaldi, Great Lead, Grey River, Leviathan, Leviathan Freeholds, Maori Gully, Red Jack's, Trafalgar, and Victory Companies.

The nominal capital involved in companies which have been wound up during the year, or are now in course of liquidation, amounts to £128,430 (including debentures). The actual capital paid in cash will amount to about £30,000 less than the total stated, as each of the companies was encumbered with about two thousand paid-up shares on which no cash was paid. This reduced total is also subject to further reduction on account of dividends paid by two of the companies—viz., Grey River, £1,062 10s., and Leviathan, £1,500, which leaves a net deficit of approximately £95,867 10s. The realised assets of the companies in liquidation have usually been exhausted in paying debts incurred whilst working, and in very few instances has there been any refund to shareholders from sale of assets.

Taking the gold-yield shown in the tabulated form—viz., 27,426 oz., and estimating the value at £3 19s. per ounce, the gross value of the gold won by the thirty-four dredges amounts to £108,332 14s., and out of this, £26,758 5s. has been distributed in dividends during the year amongst shareholders in eleven companies, leaving £81,574 9s. to cover working-cost, &c.

Following is a list showing dividends paid during the year, and also since the formation of the respective companies which are still in active operation :—

Name of Company.	No. of Shares.	Value of each Share.	Dividends, 1903.	Total Dividends.	Dividends per Share, 1903.	Total Dividends per Share.
		£ s.	£ s. d.	£ d.	s. d.	£ s. d.
A 1 Gold-dredging Company ..	8,500	1 0	850 0 0	2,125 0	2 0	0 5 0
Blackwater River	9,475	1 0	1,421 5 0	1,421 5 0	3 0	0 3 0
Buller Junction	12,500	0 15	1,875 0 0	3,437 10 0	3 0	0 5 6
Callaghan's Creek	12,500	0 15	937 10 0	1,250 0 0	1 6	0 2 0
Jamieson's Reward	9,990	1 0	499 10 0	499 10 0	1 0	0 1 0
Mokoia (ordinary)	6,500	1 0	1,925 0 0	1,925 0 0	4 0	0 4 0
Mokoia (preferred)	2,500	1 0			5 0	0 5 0
Mosquito	10,000	1 0	1,500 0 0	1,500 0 0	3 0	0 3 0
Nelson Creek	8,500	1 0	6,152 10 0	15,937 10 0	14 6	1 17 6
North Beach	8,325	1 0	2,497 10 0	2,913 15 0	6 0	0 7 0
No Town Creek	12,000	1 0	6,600 0 0	9,000 0 0	11 0	0 15 0
Pactolus (two dredges)	12,500	0 15	2,500 0 0	2,500 0 0	4 0	0 4 0
Premier (Buller) (ordinary) ..	8,085	1 0	..	..	..	..
Premier (Buller) (preferred) ..	2,500	1 0	Nil.	250 0 0	Nil.	0 2 0
Reeves's Proprietary	12,200	1 0	Nil.	610 0 0	Nil.	0 1 0

[Note.—In addition to £2,500 paid by the Pactolus Company, profits have been applied to the purchase of an extra dredge which cost about £9,500.]

Taking the working-cost for thirty-four dredges to be as given above, the cost is not widely different from that incurred by thirty-one dredges which worked during 1902. The comparative figures are interesting, and I append them.

Year.	Number of Dredges.	Gold.	Approximate Value.	Approximate Working-cost.	Average Cost per Dredge.	Dividends paid.
		Oz.	£	£	£	£ s. d.
1902	31	23,579	93,137	80,600	2,600	16,739 5 0
1903	34	27,426	108,332	81,574	2,399	26,758 5 0

It will be noted that with three extra dredges working in 1903 as compared with 1902, the total yield last year was £15,195 in excess of 1902, whilst the amount set down for working-cost, &c., shows an advance of £974. Dividends paid to shareholders were £10,019 in excess of the previous year.

Out of the thirty-one dredges engaged in 1902, nine ceased operations during the year, and the companies owning them went into liquidation, whereas last year the failures were six out of thirty-four dredges. The fleet in this district will, however, be added to during the coming year to compensate for these failures, as several new dredges are in course of construction, and probably some of those which have proven unpayable will be removed to other claims, and will recommence under new ownership. I anticipate that during 1904 the number of dredges employed in this district will be quite equal to the number engaged formerly, and guided by the working-results of the past two years, it is manifest that about £80,000 in gold must be won by the collective fleet before any profit can be expected for shareholders *in globo*. Necessarily, some of the dredges will work for long periods, and some will only be usefully engaged during short periods of the year, as shown by the working-hours set out in the appended list. But taking good and bad results together, £80,000 is roughly the working-cost for from thirty to thirty-five machines, and the average cost on this basis is about £2,500 per dredge per annum.

There is a substantial difference in the actual working-cost of several of the dredges which have worked throughout the past year, due no doubt to local conditions, and the strength of the respective machines ; but it may be fairly assumed that a dredge which incurs only reasonable stoppage for repairs, &c., and can work effectively throughout the remainder of the year under normal conditions, will incur an outlay of from £3,500 to £4,000 per annum in covering working-cost and a full maintenance of the plant. The two dredges which have given the best results to their owners during the past year,—viz., Nelson Creek and No Town Creek, incurred £4,968 7s. 3d. and £4,084 11s. 6d. respectively in carrying on operations, and it may be assumed from this guidance, as both of these dredges are working under capable management and under reasonable average conditions, that the best results can only be attained by incurring extra cost in renewing parts of the machinery before they break and thus avoid protracted stoppages in tinkering with old parts. The weak financial condition of many of the companies has prevented them from following this policy of renewing rather than repairing portions of machinery which have become badly worn, and the consequence is that frequent and protracted delay is incurred in patching up worn-out parts which ought to be renewed. It is fairly manifest that where a company is in a position to provide against stoppages by having duplicate parts on hand to replace inefficient parts, profitable work can be followed with only short interruption, and I deduce from my inquiry on this matter that it pays to make scrap-iron of parts of a dredge which have worn badly much better

than it does to run on with such parts till they actually break. Although the Nelson Creek and No Town Creek dredges have yielded good returns to shareholders, the profit is not entirely due to the richness of the ground. A good deal must be attributed to the management in keeping the dredges working efficiently, and this remark applies equally to some of the other dredges which have given fair profit. I do not infer that where the dredges have been failures the fault in all cases has been due to mismanagement, but the average yield per yard from dirt treated by successful companies goes to prove that these successes could not have been secured unless the total quantity dealt with had been substantial; and it is evident from this, that bad management will spoil the success of ground which can be made to yield large profits under efficient control.

In 1902, fourteen companies (including the Leviathan Company now in liquidation), paid dividends to shareholders, whereas in 1903 the number was reduced to eleven, but the total amount distributed was increased by £10,000. Guided by precedent, I anticipate that during the forthcoming year, and assuming that about thirty-five dredges are on the active list during the year, one-third will pay good profits to their owners, and the remainder will manage to clear working-cost. I do not suppose that the actual figures will be so large as in past years, inasmuch as the dredges remaining in active work may be accepted as "the survival of the fittest."

The following dredges are in course of construction, and will shortly be engaged in active work: Bignell's No Town, on No Town Creek; Reeves's Proprietary, No. 2, on Boatman's Creek; and Sullivan's Lead, on Duffer's Creek: while the dredge in construction for No Town No. 2 Gold-dredging Company will probably be completed about the middle of the year.

The Timber Industry.

The exports of timber and railway sleepers for the year from the port of Greymouth are as follows: Timber, 21,523,530 ft., valued £86,094; sleepers, 2,884,184 ft., value, £24,027: Total, 24,407,714 ft., value, £110,121. It is confidently expected that the export of timber during the forthcoming year will reach thirty million feet.

The Kotuku Oil-springs.

I am indebted to the manager of the boring operations at Kotuku for the following information regarding the above-mentioned springs: During the year, six bores were sunk in the locality, varying in depth from 100 ft. to 700 ft. In some cases great difficulty was experienced in piercing the hard ground, but in all the bores veins of oil were met with, one of them yielding a few gallons of oil weekly. In No. 3 bore a peculiar phenomenon was met with. When the rock was pierced, a great inrush of salt water and gas occurred, occasioning the water to eject in the form of a geyser, which still plays to a height of about 100 ft. During the year three boring-machines working entirely different processes were used. One of these is capable of boring to a depth of 2,000 ft.

Coal.

The output of coal for the year from the different mines was as follows: Blackball Mine, 88,949 tons; Brunner Mine, 92,280 tons; Tyneside Mine, 17,212 tons; Total, 198,441 tons.

General.

The number of suits disposed of in the Warden's Court at Greymouth, for the year ending the 31st December, 1903, was twenty-seven.

The revenue for the year amounted to £4,428 16s. 6d., the particulars of which are as follows: Miners' rights, £116 10s.; copies of Mining Acts, 10s.; water-races, £1 10s.; rents, £1,566 15s. 2d.; fees and fines, £74 10s. 6d.; miscellaneous, £2,669 0s. 10d.: total, £4,428 16s. 6d.

I have, &c.,
William George Kenrick, Warden.

The Under-Secretary, Mines Department.

Mr. Warden Day, Hokitika, to the Under-Secretary, Mines Department, Wellington.

Sir,— Warden's Office, Hokitika, 22nd April, 1904.

I have the honour to forward for your information the statistics for the year 1903 for that portion of the Westland Mining District under my charge, together with a few remarks upon the mining and timber industries.

Alluvial Mining.

Alluvial mining has to some extent decreased, but there is not a great difference in the yield of gold. The Wheel of Fortune Claim at Stafford has closed down, and the company is in liquidation, and the Humphrey's Gully Claim has been let on tribute.

I am indebted to Mr. E. W. Spencer, manager of the Humphrey's Gully Hydraulic Sluicing Company (Limited) for the following statement of the year's work on their claims: "During the year sluicing has been carried on in a very steady manner with the full quantity of water—viz., forty heads. This quantity has been in constant use on the claim, and was directed against the No. 1 face for seventy-five days, and the No. 2 face for 207 days of twenty-four hours. Needless to say, the head-race has been maintained in a state of good repair throughout its entire distance of approximately seventeen miles. Several small breaks occurred during the year which were promptly and effectually repaired. Two short flumes were entirely dismantled, one of which was rebuilt at a slightly higher level, the other was substituted by a ditch built up in the bed of the creek. Also, on the Mount Brown section, the flumes around Granite Bluff had to be strengthened by placing intermediate sets in position. The dam by-wash has also been raised about 12 in., which considerably increases the capacity of the dam.

The sluicing-time for the year amounts to 282 days of 24 hours, to which must be added the Sunday stoppages, leaving thirty-one days to be accounted for. Of this number, the repairs to the flumes above mentioned took nine days, and the Christmas holidays ten days, so that the total time accounted for amounts to 353 days, leaving only twelve days for time lost in the twelve months, which is fairly satisfactory. No. 1 face: The total water-supply on this face during the seventy-five days of work produced gold as follows: Tail-race, 195 oz. 5 dwt. 12 gr.; tables, 44 oz. 2 dwt.: total, 239 oz. 7 dwt. 12 gr. No. 2 face: This face was expected to improve in value as work proceeded, so attention was directed to it for 207 days with the full complement of water, resulting in the yield of gold as follows: Tail-race, 299 oz. 7 dwt. 22 gr.; tables, 184 oz. 9 dwt. 3 gr.: total, 483 oz. 17 dwt. 1 gr., making a total of 723 oz. 5 dwt. 13 gr. of gold for the year's work. Of this amount, no less than 31·6 per cent. was retained on the tables. The total value of the output was £2,820 11s. 5d., whilst the total expenditure for the same period amounted to £3,646 13s. 5d. During the year the Humphrey's Hydraulic Sluicing Company (Limited) has gone into liquidation, and has been absorbed by the parent company—the Consolidated Goldfields of New Zealand (Limited)—as a going concern. On account of the unsatisfactory gold-yield obtained from the ground, it was decided to let the claim on tribute; this has been done, the tributers taking possession and commencing operations on the 7th January. It is greatly to be regretted that the gold-contents of the gravel are so low, amounting approximately to $\frac{3}{5}$ gr. per yard, for on account of the enormous deposits of gravel in the district, if of only a shade better quality, a large population would be employed."

The Mont D'Or Company at Ross is still a successful claim. I am informed that this company's claims, together with the properties belonging to the late Ross United Company, have been placed under offer to a London syndicate. If the proposed new company be succesfully floated, it will be of great immediate benefit to the Ross district, and should give great impetus to mining matters there.

The Westland Hydraulic and Sluicing claims at the Waiho are again being worked, and with new management, it is hoped that they will reach the payable stage.

There is no new development to record, and unless more systematic prospecting is done, it is unlikely that the mining industry will progress. The tendency at present is apparently in the opposite direction. The moneys spent by the various prospecting associations in the district have not effected anything tangible.

There is still a good deal of interest manifested in the future of the black-sand leads on the sea-beaches. During the year two dredges were at work—namely, the Montezuma, near Hokitika, and the Wanganui Wataroa at the Saltwater. The first-named is still working, and so far has hardly paid working-expenses, but the promoters of the company have great faith in the venture, and believe that, as the dredge works southwards towards Hokitika, the returns will enable dividends to be paid. This dredge has apparently solved the difficulty of getting rid of the sand so as to prevent it from flowing back into the paddock, by using a powerful sand-pump, and discharging the sand seawards over the crown of the beach, instead of allowing it to be taken up by the elevator and discharged astern of the dredge. The other dredge (the Wanganui Wataroa) was a failure from the start, the return of gold being very small. This company is now in liquidation, and the dredge has been sold. A dredge will in the course of the next few months be at work on the Five-mile Beach below Okarito, and it is hoped that the returns from it will be large. The beach in former years yielded large quantities of gold, and the old miners confidently assert that a dredge will be able to work the ground to advantage.

There are eight other dredges at work in this district, but none of them, owing in great part to the abnormal wear-and-tear and breakages, have done much more than pay working-expenses. The cost of fuel has also gone a long way in eating up profits. For instance, the Prince of Wales Company at Ross pays more than £1,000 a year for coal. When, however, the railway to Ross is completed, at least one-third of that sum will be saved and available for distribution as dividends.

Back Creek and Seddon's Terrace.

This rich and important field is languishing for want of an adequate water-supply. The majority of the claims are idle for a good part of the year owing to the scarcity of water, and a fair area of ground reputed to be payable is lying idle from the same cause. The claimholders interested in the Rimu Water-race have now paid off the whole of the mortgage on that race. They have paid over £5,000 in five years, although the claims have not worked anything like full time. This by itself shows the value of the field. If a good and constant supply of water were available, in addition to the present intermittent one, a number of claims would be taken up and worked in addition to those already in existence. The whole district is anxiously waiting the result of the survey at present being made with the view of bringing the water from Humphrey's Gully to this field.

TIMBER.

As the timber industry is now practically under the control of the Warden, some mention of it should be made in this report.

Large areas have been applied for throughout the district, and during the next few months several new mills should be working. The output of timber has very largely increased during the last three years, and there is every prospect of its increasing.

I would point out the necessity for providing for proper surveys to be made of the areas taken up or applied for, as at present the regulations only provide for a sketch-plan certified by a surveyor. As contiguous areas are taken up by separate parties, litigation will, in all probability, arise from this cause. With respect to special claims over 20 acres, the Act provides that an exact survey must be made, and the area that the Warden can grant in any one title is limited to 100 acres. For timber-areas the Warden can grant up to 200 acres, and also make three reservations of 200 acres each—in all 800 acres. In the case of special mining claims, which in most instances are speculations pure and

simple, as no one can say with any certainty what the ground will produce, the applicant has to incur an expense of possibly £40 or £50, while with regard to timber-areas, the cost of the survey is limited to £5, and the applicant can calculate beforehand the quantity and value of the timber on the ground

I have, &c.,

VICTOR GRACE DAY, Warden.

The Under-Secretary, Mines Department, Wellington.

Mr. Warden KEDDELL, Oamaru, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,— Warden's Office, Oamaru, 18th May, 1904.

I have the honour to report with respect to that portion of the Otago Gold-mining District, situated south of Lake Ellesmere, and known as the Ninety-mile Beach, that no mining operations have taken place during the year ended the 31st December, 1903, and that the public interest which was excited some years ago and led to the proclamation of this district has entirely fallen off.

I beg also to forward the statistical returns for the same period.

There has been nothing of importance or novelty to report upon respecting mining operations during the past year in the goldfields situate at Maerewhenua and Livingstone.

The population though fallen away greatly since I first took charge, has not been reduced since my last report.

The Mountain Hut Water-race has not yet fulfilled its promise of plenty, and such spare water as it can supply, even with the scanty population, is not sufficient to fill the demand.

The principal work now in hand is the special alluvial claim of Mr. John Christian, an experienced miner, who is largely interested in this sub-district. He is opening up this claim in the teeth of very arduous deadwork, the ground being very thickly interspersed with heavy boulders, which have all to be removed at great cost of time and labour.

The mines generally are engaged in a small way in hydraulic sluicing.

At the Quarterly Courts the miners have always a number of applications (occasionally opposed), but serious litigation is rarely met with.

I have recently been informed that the supply of water in the Mountain Hut Race has improved of late, and that the prospect of the company may be supposed to have improved.

Generally speaking, if the miners can get a full supply of water for two days in the week they can make fair wages and are satisfied. If, as was hoped, the supply of water by the Mountain Hut Race was continuous, there is plenty of gold to be won, and this portion of the field would give remunerative employment to more men.

I have, &c.,

JACKSON KEDDELL, Warden.

The Under-Secretary, Mines Department, Wellington.

Mr. Warden CAREW, Dunedin, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,— Warden's Office, Dunedin, 1st March, 1904.

I have the honour to forward herewith the annual returns for the Hindon Division of the Otago Mining District for the year ending the 31st December, 1903, and to report as follows :—

The number of miners employed during the year was forty-two, that is about the same as in the previous year. One-half of that number worked for the Barewood Quartz-mining Company, and an average of sixteen men for the Deep Stream Amalgamated Hydraulic Sluicing Company. The Barewood Company, from quartz-mining, paid £2,800, and the Deep Stream Company, from alluvial workings, paid £1,500 in dividends during the year.

There is a large area of auriferous country in the district, but very little prospecting is done, and consequently there is no present likelihood of an increased mining population. There is nothing further to report.

I have, &c.,

E. H. CAREW, Warden.

The Under-Secretary, Mines Department, Wellington.

Mr. Warden MCENNIS, Naseby, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,— Warden's Office, Naseby, 8th April, 1904.

In forwarding the mining statistics for Mount Ida District for the year ending the 31st December, 1903, I have the honour to add a few general remarks as follows :—

NASEBY.

During the year mining operations have been carried on regularly, except for about two months, when all outdoor work was stopped by the severe frosts and heavy fall of snow. Fourteen claims have been worked by means of hydraulic elevating and mostly with good results. Several new claims have been taken up, some being worked, and preparations are going on for working the others. There are only a few claims now being worked on "Maori bottom"—as it is called here—and it is believed these are yielding fair wages. There are very few individual or fossicking claims being now worked in this locality. Generally speaking, mining in and around Naseby is fairly prosperous.

Kyeburn.

At this place Stewart Bros. have erected a good elevating plant on their claim of 40 acres, and it is expected that their enterprise will be rewarded. The Naumai dredge is still working, but not with very satisfactory results. The other claimholders are steadily working as heretofore, and appear to be satisfied with their earnings.

Patearoa and Serpentine.

At the former place Stewart and Bros.' workings have been much hindered through law proceedings, instituted by a landowner claiming damages for injuries to his land by tailings and polluted water from said claim going on his land. However, the matter is now amicably arranged and the claim has resumed operations. This claim is worked by an up-to-date elevating plant, and is paying well. Cambridge and party have a claim at this place and intend putting an elevator on soon. Johnson and party have during the year erected a new elevating plant on their claim, and they are said to be doing very well. At Serpentine there are two elevators at work giving satisfactory results. Several small parties are ground-sluicing and making a fair living. It is rumoured that an effort will soon be made to test the quartz lodes known to exist in this locality.

Hyde and Middlemarch.

From these localities there is nothing worth reporting. A little mining is going on in the same quiet way as for years past.

Macrae's.

During the year there have been no fresh developments of any great moment; in alluvial mining there has been less done than in previous years.

Quartz-mining has been more actively followed up, and there seems to be a good future before it.

The Golden Bar Mine has had a very successful year, and has given employment to eight men. The yields have not been above ½ oz. per ton, but as the reef is large, it has left a very good profit.

The Bonanza Mine did not do very much work in the latter part of the year, and stands in need of more development.

The Golden Quarry reef was worked by Mills and party, who shifted their battery from Macrae's Flat to the reef at Horse Flat, and though the returns were very small, they are reported to have paid all expenses.

The Maritana (McGill's) Mine has crushed when water was available, and the concentrates have been saved and shipped to Melbourne for treatment.

The Golden Point Mine (W. and G. Donaldson) has operated during the whole of the year, and a large number of improvements and alterations have been made; a new ten-head battery of latest type of heavy stamps was started, a 35-horse power compound-engine erected, and a supply of lignite (opened on Horse Flat two miles from the battery) is used with success to fire with. This means a great saving, as otherwise the coal would have to be railed to Dunback and then carted for a distance of fourteen miles. Scheelite continues to be produced, and is shipped to Germany, where it brings a big price at present, there being a much greater demand than the supply can overtake. Eighteen men are employed on this mine, and a low-level drive 250 ft. is nearly constructed.

The Mount Highlay (C. Nunn) Mine and ten-head battery worked by water-power: Some 200 tons have been crushed during the year, yielding 45 oz. of gold. A low-level drive of 500 ft. is now being driven. The owner has good expectations of the future of this mine.

The Inch Valley and the Inchdale dredges near Dunback are working, and are said to have yielded fairly good returns during the past year.

Matakanui.

The Undaunted Gold-mining Company has paid a dividend for the year of £750. The water-supply during the year was not very good, and the claim was idle for six weeks in consequence of the heavy fall of snow and hard frosts. This company commands the best water-right in the locality: pressure to elevating pipe-lines, 420 ft., lifting 45 ft; breaking-down line 370 ft. pressure. The face is about 60 ft. deep composed of gravel-wash and a stiff band of clay. Nine men are generally employed on claim.

The Tinker's Gold-mining Company has a pressure of 500 ft., and are elevating about 30 ft. when they have sufficient water. When water is scarce they work in shallow ground. The ground worked is a gravel-wash. This company paid in dividends during the year, £375. Seven to eight men are generally employed on claim.

The Matakanui Gold-mining Company: This company has done very well during the year; it is working a rich vein of gold, elevating about 40 ft. The face is 60 ft. deep, composed of gravel-wash and small bands of clay; they strip about 20 ft., and lift the balance. Eight men are generally employed on this claim.

The Mount Morgan Gold-mining Company: This company is working ground abandoned by the Klondyke Company, with fair results, elevating about 15 ft. Four men are generally employed on the claim.

Besides these there are a few small claims doing fairly well.

St. Bathan's.

The United M. and E. Company: This company had a splendid lead of gold exposed about last April, and good returns seemed certain to be obtained, when a slip which occurred on the hill or back-reef side, shifted the pipe-line and endangered the elevator, so that it became necessary to remove both; and the management considered it better to abandon that portion of the claim in the meantime, and

take up a new tail-race from the St. Bathan's channel to work the eastern portion of claim. This mill is now almost completed, and the company have a good area of rich ground which can be elevated from a depth of 150 ft. below the tail-race. Good returns are expected for many years from this portion of the claim. The company have three races from Rock's Creek, Mountain Creek, and Dunstan Creek, with a never-failing water-supply which is delivered on the claim with a pressure of 350 ft. Notwithstanding the many difficulties encountered, the yield of gold was highly satisfactory.

Eagle and Gray's Claim: This adjoins the United M. and E. Company's claim. Very little work has been done on it during the last year, but the owners intend shortly to take up the fall gained by the St. Bathan's Channel which will give them 25 ft. of a face to ground-sluice upon, and as the claim is a proved one, many years of profitable working can confidently be looked forward to.

The Scandinavian Company's Claim: A lot of work has been done on this claim. A vast amount of stone and rubbish has been swept off the surface of the ground preparatory to putting down a large elevator. A lot of broken reef and stone has also been swept off the back reef, which has also been thoroughly drained, so as to minimise the danger of slips when the deep ground is opened out.

The Surface Hill Workings: All the operations carried on in this locality are conducted by the Scandinavian Company who have two elevators at work—one at Surface Hill, and the other at the Lagoon. At the former place an elevator was put in position last March, which lifted the material 105 ft. Six cubic feet of water per second, and one cubic yard of material per minute were easily lifted. To insure continuous work being carried on, another elevator was put in position alongside the first one, so that in case of accident to one, the other was immediately put to work; by this means a great deal of time was saved. At the end of April the ground behind the elevators, which was of a wet and drifty nature, suddenly slipped and carried away both elevators. The manager considered it impossible to put another elevator in the same position, and shifted down the claim about 4 chains where good standing ground was known to be. A large elevator is now working to a depth of 90 ft., and preparations are being made to erect another at a depth of 113 ft. which will enable all the old ground to be drained and worked. A good return is expected for all this outlay. In the Lagoon claim a bar of clay about 60 ft. thick overlies the wash which varies from 1 ft. to 12 ft. in thickness; good returns are anticipated from this claim, which is for the first time being worked with a modern plant. The ground is elevated from a depth of 44 ft., the actual pressure being 275 ft. The company contemplate an expenditure of between £4,000 and £5,000 so as to further increase their water-power, and thus enable them to elevate to a much greater height than at present.

The Shamrock Hydraulic Sluicing Company: This company is carrying on extensive sluicing operations about four miles from St. Bathan's, near Manuherikia River. The ground worked since the inception of the company about six years ago has been mostly the heavy alluvial gravel in what is known as Welshman's Gully: it has been worked by elevating and stacking the tailings and has paid handsomely. The gully is now worked out, and the company before shifting their plant to the quartz-drift formation known as "Brennans," are taking out some remaining blocks left by Chinese miners in early days. Good results are being obtained. As the company have prospected the ground at Brennans and got good prospects, it is almost certain that, when they set in to work there, they will have good payable ground and many years of work.

The Vinegar Hill Company's Claim, situate about two miles from St. Bathan's: This company have met with better success during the past year, and notwithstanding the fact that a considerable amount of water and labour was expended in stripping the claim known as "Excell's," from which no good has as yet been obtained but upon which operations on a large scale will shortly be commenced, a fair profit was made during the year from the elevator claim. The ground was elevated from a depth of 30 ft. with a pressure of 400 ft. This company have good water-rights from Shepherd's and Brown's Creeks, and doubtless the best plant in this locality.

O'Hara and Party, Two-mile Flat, have rented Watson's Water-race from Mr. Ewing, and are working in partnership with Mr. Gannon. The ground is elevated to a height of 50 ft. with 150 ft. of pressure, and as these are experienced men and have a good plant and water-right, success seems assured.

Cambrian's.

A little mining is still carried on here, the most extensive being the workings of Fordham and Gay's, who are working the ground by elevating and then stacking the tailings. The returns are very regular and should continue so for some time to come. Amongst others mining here, are Jones and Son, McGurkin, and Hughes and party. All seem to be satisfied with the results of their labour.

Gold to the value of £50,632 14s. 9d. has been purchased by the various banks in the district during the year.

I have, &c.,
J. McEnnis, Warden.

The Under-Secretary, Mines Department, Wellington.

Mr. Warden Cruickshank, Lawrence, to the Under-Secretary, for Mines, Wellington.

Sir,— Warden's Office, Lawrence, 30th March, 1904.

I have the honour to forward to you herewith statistical returns for the year ended the 31st December, 1903, and to submit the following report on the several mining sub-districts under my charge for the same period.

Wetherstone's Blue Spur and Tuapeka Flat.

In the Wetherstone's district steady work has been going on. The Happy Valley dredge has worked a large area, and the company is now paying dividends, Owing to the severe winter and long dry summer following, the sluicing claims have not been able to work full time,

With reference to the Blue Spur and Gabriel's Gully Consolidated Gold Company (Limited) at the Blue Spur, I am indebted to the General Manager, Mr. J. Howard Jackson, for the following figures: Average number of men employed, 26; amount of cement treated, 170,262 cubic yards; amount of gold won, 1,669 oz., worth £6,633; the cost of winning the gold, £2 12s. 5d. per oz., or 66 per cent. of its value; amount paid in wages, £2,676; amount paid for explosives, £366; total colonial expenditure, £4,375. Owing to a long and severe winter and a dry summer following, the decrease of the water-supply as compared with the previous year amounted to seventy-eight days; this also applies to decreased wages-expenditure. Early in the year the main drain failed in such a position as to render its repair beyond the means of the company. In consequence of this, about 7 per cent. of the available water-supply has been diverted from hydraulic elevating and sluicing (remunerative work) for the purposes of unwatering the mine. No accidents have occurred in this mine during the year. The management complain of the present high rate for accident-insurance premiums.

In Munro's Gully, Messrs. John Kitto and party are still working their elevating claim, and lower down the same gully Messrs. Thomas and party have started a sluicing claim, working it with water lifted from Kitto and party's tail-water.

At the Tuapeka Flat five dredges have been at work during the year with fairly satisfactory results; they are as follows: The Gabriel, the Tuapeka, the Reliance, the Lawrence, and the Taniwha.

Clutha River.

On the Clutha River, between the Tallaburn Creek and the Tuapeka Mouth, the number of dredges is now reduced to two, viz.,—The Otago No. 2 and the New Paul's Beach, and when the river is low, fairly good returns are obtained.

Waipori.

Eleven dredges have been at work in this sub-district during the year, but several of them have been getting very small returns for a good many months, and two of the companies—viz., the Oceanic and Lower Enfield, have been forced to liquidate. On the other hand, the elevating and sluicing claims have, I am informed, yielded very satisfactory returns.

Waitahuna.

Three dredges are still carrying on operations in this locality, but being owned by private syndicates, the returns are not disclosed. The three principal sluicing claims—viz., Thomson and party, Ferris and party, and the Sailors' Gully Sluicing Company, at Waitahuna Gully, are still in active operation.

Tapanui.

One dredge, owned privately, at work on the Pomahaka River, and another dredge under construction to work Scrubby Flat, are the only indications of mining in this sub-district.

Waikaia.

In this district, I am pleased to report that the dredging industry has now been well established; no less than seven dredges are in active operation, all getting payable returns, and some of the companies paying good dividends.

The revenue collected by the Receiver of Gold Revenue at Waikaia for rents, &c., amounted to £358 for the year. I am informed that the local bank at Waikaia purchased over 2,000 oz. of gold during the year, and that, in all probability, another 1,500 oz. has been obtained and disposed of apart from the local bank, making a total yield from this sub-district of about 3,500 oz. of gold, of a total value of about £12,900, which must be considered as highly satisfactory.

The number of Europeans engaged in the district in sluicing and dredging is about 150, and about thirty Chinese.

Gore (including Waikaka, Waimumu, and Charlton).

In this sub-district there is nothing particular to report on, the mining industry being about the same as it was when I submitted my last report twelve months ago, except that the number of dredges in active operations at Waikaka has been increased from sixteen to twenty; at Charlton, the number has been reduced from five to three; at Waimumu, reduced from seven to six; and generally speaking, the returns are fairly good.

With reference to the dredging at Waikaka, perhaps it is not out of place for me to mention that, in my opinion, a great deal of very valuable agricultural land (freehold) is being absolutely destroyed by dredging operations, and although giving a good deal of employment just now, it is very doubtful if the destruction of this good land will not ultimately prove injurious instead of beneficial to the district and colony.

I have, &c.,

G. Cruickshank, Warden.

The Under-Secretary, Mines Department, Wellington.

Mr. Warden BURGESS, Clyde, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,— Warden's Office, Clyde, 19th May, 1904.

I have the honour to forward herewith statistical returns for the year ended the 31st December, 1903, for that portion of the Otago Mining District under my charge, also general report on the gold-fields for the same period.

QUEENSTOWN AND ARROWTOWN.

There is little of importance to add to my report of last year on these sub-districts. Alluvial mining still continues to employ the greatest number of men, and to yield a large proportion of the gold obtained in the district.

Most of these claims are situated on the Shotover River and the returns from this locality are larger and more regular than those from alluvial mining in any other portion of the district. At Skipper's, Messrs. Stephenson, Aspinall, Davis, Henderson, and Johnson, have been working their respective claims with a fair amount of success. The New Skipper's Sluicing Company have worked steadily during the year for a return of 155 oz. of gold. At the Sandhills, Lee and party are working with satisfactory results on ground on Monk's Terrace. At the Branches, Messrs. Commins, Costello, and Dwan, have done a large amount of work, and have expended a considerable amount of capital in developing their claim. At Skipper's River, claims are held and worked by Messrs. Rogers and Johnson, Peat and Helms, and Lynch and party, and all are meeting with fair returns. A little below, Messrs. Thompson and McLeod, and Robertson, have been working for three or four years driving a tunnel. This work is now completed, and the claim is being opened out. The prospects are most promising, and there is good reason to believe the shareholders will receive the reward of their labour and perseverance. The Arthur's Point Hydraulic Claim at the Shotover Big Beach, has changed hands, and the present owners (Messrs, Phelan and McMullan) are getting gold in payable quantity. There is very little mining being carried on at Moke Creek, and what little has been done, has not been successful. The Moonlight and Moonlight No. 2 Companies are still working their claims here with not very satisfactory results. Messrs. Lee, Reid, and McDonald, have claims at the Twelve-mile Creek, Lake Wakatipu, and are well satisfied with the results of their work.

On the Arrow River the Arrow Falls Company are the only owners of mining properties carrying on on operations of any magnitude. They have carried on work during the year for a return of 421 oz. Hay Bros. are working a claim of 20 acres, but their work has been very much interfered with by floods. At Cardrona, Mr. Walter Little is working very successfully on his claim on the Criffel Face. Barker and party and others are also working claims in the vicinity. At Macetown, Anderson and party's claim is nearly worked out. There are several small claims in the vicinity that are paying fairly well. There are two parties working claims near the Kawarau River—the Golden Link Syndicate at the Shotover Junction, and Mr. Harbottle at Gibbston. At the head of Lake Wakatipu, a few Chinese are working, and only one small claim, owned by Valpy Bros., is working at Bucklerburn Creek.

Of all the dredges that have been built and placed upon their claims during the last four or five years in this district, there are only four now at work. The Maori Point and New Prince Arthur on the Shotover River, and the Lone Star and La Franchi at Cardrona. The first-named is owned by a private company, and the returns are not made public, but it was understood to be more than paying its way until the severe winter of last year interfered with its operations. It was frozen up, and after that, seemed to meet with persistent ill-luck, and very little work has been done since. The Prince Arthur dredge working in the gorge at Moke Creek has also been unfortunate. Floods in the river proved very troublesome, and finally it sank, and the difficulty and expense of raising it forced the company into liquidation. A new company was formed, and took over the property shortly before the end of the year, but had done no dredging up to the 31st December. The La Franchi dredge (worked by water-power) also suffered from the severe winter, and through stress of financial difficulties the company was forced into liquidation. A new company has been formed to take over the property, but up to the end of the year had not recommenced operations. The Lone Star dredge, owned by a private company with a small capital, has been working for the greater part of the year; the results of the year's operations being 664 oz. of gold.

Quartz-mining looks more promising than it has done for some time. Mr. R. Lee has purchased the old Achilles Mine at Bullendale. This was regarded as a very important mine a few years ago, and employed a large number of workmen. Operations eventually proved unprofitable, and about two years ago the mine was closed down. Efforts were made, unsuccessfully, to procure capital in England and elsewhere to enable the claim to be further prospected, and finally, the whole property, consisting of the mine and very extensive machinery, was sold to Mr. Robert Lee. Work has been energetically begun by the new proprietor. A new tunnel has been commenced, and steps taken to systematically work the property. The reopening of this mine is regarded with great interest in the district, as it is confidently hoped that with systematic and economical management, it will again take rank as a prominent gold-producer, and give employment to a large number of men. The Shotover Quartz-mining Company's mine at Skipper's has during the year crushed 1,003 tons of quartz, from which 465 oz. of gold was obtained. The Premier Sunrise Company, working at Macetown, crushed 2,030 tons of quartz for a return of 1,358 oz., and 47 tons of concentrates, treated by the cyanide process yielded 236 oz. of gold. The old Tipperary Mine, formerly owned by the Westralia and New Zealand Gold Explorers, has been taken up again by the Indian Glenrock (Wynaad) Company, and repairing-work has been commenced. Some prospecting has been done on the Invincible reef at Glenorchy, and a little on the reefs in Brown and Jenning's gullies at Skipper's. The scheelite mine at Glenorchy is still in existence, but very little work is being done on it more capital is necessary to develop it.

Cromwell.

The year has been a fairly productive one as regards mining, notwithstanding the fact that owing to the severe winter mining operations were very considerably impeded.

The dredging season was one of the shortest and most broken ever experienced in the district, and to that fact must be attributed the decrease in the gold-returns as compared with those of last year. From time to time, however, during the short intervals of a favourable river, very satisfactory returns were obtained by a number of dredges. The Hartley and Riley Gold-dredging Company has been especially fortunate, for during the year this company's dredge obtained gold sufficient to enable the directors to distribute among the shareholders dividends to the extent of £2 7s. 6d. on each £1 share.

The Electric Gold-dredging Company (Limited), whose claim is situated on the Kawarau River, near Bannockburn, has also been very successful with its two dredges during the past season, and although operations for this year may be said to have just begun, shareholders have had 9s. per share in dividends paid to them.

The dredging-areas in the Upper Clutha are now being steadily worked. In 1902 there were four dredges on this field; there are now eight, and although some of them have not yet been put into working-order, sufficient work has been done by the others to show that this portion of the river will pay for dredging, and will justify the confidence of those who have placed dredges on the river. There are six dredges at work on the Nevis, and all are reported to be doing well. They are fortunate in having a good supply of coal so near at hand.

Twenty-one alluvial claims were granted in 1903, comprising areas ranging from 1 to 19 acres. Of these claims five are situate on the Nevis, eight in Bannockburn, and eight in Lowburn and Mount Pisa districts. Most of these claims are being worked and afford fairly remunerative employment to a number of miners. A party of miners are engaged in working an extended alluvial claim at Quartz Reef Point. This claim has been working continuously for about thirty years, and has always yielded payable returns. Two parties working alluvial claims at Nevis are reported to be doing very well.

There is very little to be said of quartz-mining in this sub-district at present. The claims reported last year as having been taken up on the Carrick Ranges have been abandoned. Work was done on some of them, and samples of quartz were taken from the reefs and tried at the School of Mines in Dunedin. The quartz proved too poor to pay for treatment, either by the battery or the cyanide process, and work was in consequence discontinued.

There are two quartz claims at work at Bendigo, but so far the results do not justify the expectation of any pronounced success in quartz-mining in this district.

Clyde and Alexandra.

In the immediate neighbourhood of Clyde mining during the past year has not proved a success. Dredges one after another have ceased operations and the respective companies to which they belonged have gone into liquidation and abandoned their claims. The only dredges remaining on the stretch of the river between the Half-way House and the Clyde Bridge are the Davis's Bend No. 2 and the Monte Christo. It is questionable whether the Davis Bend dredge will again commence operations, while there is left in the Monte Christo Company's funds only a small sum available for further prospecting.

Although mining is at present depressed in this part of the river there is good reason to believe that payable gold could be obtained here if worked by a powerful dredge with sufficient length of ladder to reach the depth required. It will no doubt take some time to re-establish confidence sufficient to secure this being done, but given a claim large enough to warrant the expenditure, I believe the necessary capital would be forthcoming.

The Unity, Matau, and Dunstan Lead dredges have done well. In the aggregate they obtained 3,658 oz., and paid in dividends to the shareholders the sum of £5,598.

Only two or three parties are giving their attention to sluicing—viz., Gartly Bros.' at Springvale, and W. Anderson on the Dunstan Commonage. A few men are still employed in the outlying gullies, but their number is year by year becoming less. The younger men do not seem to care for this work, and the time is not far distant when the small sluicing claims will cease to exist. The water now employed for sluicing will in time no doubt be acquired by fruit-growers and others for irrigation purposes.

At and around Alexandra dredging is carried on with its characteristic energy and with successful results. With the exception of short stoppages necessary for overhauling and repairs all have been steadily employed. With two exceptions the fifteen dredges between the Dunstan Lead and the Alexandra Bridge have been very profitably worked, and have enabled the different companies to pay to the shareholders an extremely satisfactory interest on their investments.

From the bridge down to the Fourteen-mile Claim there are ten dredges, nine of which may be said to be working when the state of the river will permit. The Manuherikia, just below Italian Bend, had a most successful season; during a run of twenty-one weeks of actual dredging, 3,978 oz. of gold was obtained, an average of nearly 190 oz. per week. This claim seems to prove richer year by year. During the season of 1902 it took thirty weeks to obtain 1,847 oz., or an average of 61½ oz. per working-week. The dividends declared during 1902 amounted to £4,800 or 40 per cent. on the capital, and last year £13,200, which exceeds the total capital of the company by £1,200.

The only companies other than the Manuherikia between the bridge and the Fourteen-mile to reach the dividend stage were the Clyde and the Sailor's Bend; the others not only met with sundry mishaps, but were seriously handicapped by a most unfavourable dredging winter. There seems to be a reasonable prospect of a prosperous future in this gorge if it only could be worked with suitable machinery.

The Olrig and the Morning Star are the only working dredges in the Manuherikia at present, although several claims are held by parties who intend, if the necessary capital can be raised, to resume operations. The Olrig works steadily all the year round, and the returns, though not large, are sufficient to enable the company to declare an occasional dividend. The Morning Star is worked by a private company, the scene of operations being the old Manorburn Claim. The returns are not made public, but it is believed they are satisfactory.

Sluicing.

The Alexandra Bonanza Company, as I feared last year, failed to obtain sufficient gold on the Galloway terraces to warrant further operations. Work in consequence ceased, and protection was obtained for six months. Several special and other claims have been taken up in the hills at the back of the ground worked by the Bonanza Company on a seam of gold-bearing gravel locally known as "granite," the discovery of which a few years ago caused a small rush to this ground. When this land was taken up previously, there was absolutely no water to be got for other purposes than cradling, and the ground proving not payable when worked by this method, was abandoned. It was taken up again when the Bonanza Company ceased operations in the hope that water for sluicing would be obtained from the Bonanza race. I am informed by the manager of the company that applications for upwards of forty heads have been received, and that it is more than likely the company will, after being satisfied that the ground is payable, lease the water and for the present abandon work on its own claims. I have visited the ground on two occasions myself, and think that with water supplied at a reasonable rate, the field will prove payable and that at least fifty-men can be employed there.

Mr. Rivers has had a disappointing year's work at Tucker Hill. The ground has been considerably picked over before and must of necessity prove patchy. He is very hopeful however of ultimate success.

Butcher's and Conroy's Gullies are practically idle. Mr. McCarthy has a claim which he has worked for several years in Conroy's Gully, but it is now under protection, work having ceased for the want of water.

BALD HILL FLAT.

There is very little to report concerning this once prosperous field. The Last Chance Company, Dowdall and party, and Carroll and party are the only persons or companies now working in Obelisk Creek and the adjoining flats. All are working to advantage, and could make their efforts still more successful were it not for the severe frosts in winter and the shortness of water.

Quartz-mining.

The Excelsior and White's reefs are still being persevered with, but the profits are small, and the outlook not very promising.

ROXBURGH

Although a few dredging companies in this portion of the district have perished for want of the necessary capital, and fewer dredges are now in operation, I think the industry is in a sounder condition at present than at any time during or since the boom. There are sixteen dredges at work in the river between Coal Creek and the Island Block, and with the exception of the Teviot (idle at present) all are working steadily and with very satisfactory results. The Endeavour dredge and the Gold King dredge fell into the hands of Mr. Joseph Sparrow, who lost no time in getting them to work. The returns are not published, but I am credibly informed that both are getting above 40 oz. per week. The Golden Gate during the year paid in dividends £2,125, an amount closely approximating to the total capital of the company. The Golden Run, Golden Bed, Ettrick, Golden Treasure, and the Island Block are all obtaining satisfactory returns, and most of them are paying dividends. At Roxburgh, the Jubilee is a very persistent gold-producer, and has paid steadily since commencing work, while the Lady Roxburgh and the Molyneux Kohinoor are obtaining returns which leave a handsome margin of profit.

Hydraulic Sluicing.

During the year the Pleasant Valley Company was compelled to liquidate, but a syndicate of local people, still retaining faith in the ground, purchased the property, and are now engaged in active operations. Manuel Bros., and Michell and Parker are engaged on the western bank of the river between Coal Creek and Roxburgh, and are meeting with success. George and party are working the old Commissioner's Flat claim on the eastern bank. The Roxburgh Amalgamated Company is working constantly, although the returns are not equal to those obtained during the earlier history of the claim, still sufficient gold is obtained to warrant a continuance of operations. The Ladysmith Company's claim holds the foremost position as a sluicing claim at present in the district, and success seems assured for some time to come. It was intended at first to work the ground by means of dredging, but further consideration resulted in the present method being adopted.

WAIKAIA AND POTTER'S.

A few parties are working small claims in this district, and are only meeting with moderate success.

I have, &c.,

FRED. J. BURGESS, Warden.

The Under-Secretary, Mines Department, Wellington.

Mr. Warden McCarthy, Invercargill, to the Under-Secretary, Mines Department, Wellington.

Sir,— Warden's Office, Invercargill, 15th March, 1904.

I have the honour to forward herewith the annual statistical returns as well as my annual report on that portion of the Otago Mining District under my charge.

Round Hill Goldfield.—Nothing of great importance has occurred during the year. The mining is chiefly confined to the Round Hill Gold-mining Company (Limited), the Ourawera Gold-mining Company (Limited), the Smith Gold-mining Company, and a few small Europeans' claims. Most of the Chinese have left for the Orepuki Goldfield.

Orepuki Goldfield.—This field is not so prosperous as it used to be some years back. The ground known as "the Old Township," which has been the richest in the district, is nearly worked out, and the miners are casting longing eyes at the freehold land consisting of Sections 10 to 19, Block II., Longwood District, containing about 700 acres, which is known to be more or less auriferous, and some of it is held to be very rich in the precious metal. Experienced miners in the district generally consider that sooner or later it must be resumed by the Government for mining purposes.

West Waiau Goldfield.—On this field there is only one party at work. They hold nearly the whole of the available water, and have a very complete mining plant of piping, hydraulic hose, giant nozzle, &c., including an acetylene gas plant for night-shift work. The proprietors have expended large sums of money in the purchase of water-races, plant, &c., including that spent in developing their property. It is to be hoped that they will be rewarded by handsome returns for many years to come.

Preservation Inlet Goldfield.—Matters are very quiet on this field. The New Star Gold-mining Company (Limited) have had an unfortunate year, and have been compelled to go into liquidation. Treseder and party and a few others are still pursuing operations quietly.

Stewart Island Goldfield.—Widdowson and party have continued to work their special quartz claim on Block I., Anglem District, during the year. They did 80 ft. of driving in country which is very wet and also very loose. They had to closely timber the drive all the way. Two shafts were sunk not more than 30 ft. deep each. Two drainage-tunnels 69 ft. long were boxed in with flood-gates. A new camp has been built, a big slip that came down off the face was cleared away, and a ton of stone obtained and forwarded to Dunedin for assay. The following is a list of the machinery on the claim: 1 battery of one stamp, 1 Pelton wheel (up to 10-horse power), 96 ft. steel fluming, with valves and double nozzles, 20 chain wooden fluming, 20 chains water-race. Wages paid: Mine-manager, 10s. a day; workmen, 8s. a day. Thomson, Fraser, and party have been steadily prospecting for tin in the Pegasus district.

Wyndham and Waikawa Goldfields.—There is so far as I can learn, no mining of any importance in progress in any of these localities.

I have, &c.,

S. Ernest McCarthy,

The Under-Secretary, Mines Department, Wellington. Warden.

GOVERNMENT WATER-RACES.

Mr. Alex. Aitken, Manager, Kumara District Water-races, to the Under-Secretary, Mines Department, Wellington.

Sir,— Kumara, 5th May, 1904.

I have the honour to forward the following report on the working of the Waimea-Kumara water-races for the financial year ended the 31st March, 1904.

Waimea Race.

The total sales of water from this race for the year ended the 31st March, 1904, amounted to £665 5s. 3d., and the expenditure for the same period, for gauging, maintenance, and repairs, was £718 7s. 6d., showing a debit balance of £53 2s. 3d. on the transactions for the year.

The average number of miners supplied with water for sluicing purposes from the race during the year was 25·41, and the approximate quantity of gold obtained by them, was 1,989 oz., having a value of £7,757 2s.

The sales of water were £149 11s. 11d. less than during the preceding year, and the quantity of gold obtained by miners using water from the race was less by 447 oz. (approximately) representing a decreased value of £1,743 6s.

The number of miners employed in sluicing with water from the race was 3·5 less than during the preceding year.

The expenditure on gauging, maintenance, and repairs, was less by £69 9s. 1d. than during the preceding year, and the headworks at Kawhaka, the fluming, Waimea siphon, and all the races, and branch races have been maintained, and are now in a thorough state of repair.

The claims at the Stafford end of the race have been on very poor ground, and have done very little work. This has to a very large extent reduced the sales of water in that locality, but none of the claims have been abandoned, and fresh efforts are being made to find ground of a more payable character.

All the parties using water from the race in the Stafford portion of the district during the past year have been Chinamen, but the ground worked by them has been very poor, and the race-revenue has suffered accordingly. They are still however, persevering in their endeavours to open up ground of a more payable character, and as there is still a large extent of unworked ground, there is a fair prospect of their being more successful in the future.

In the Waimea portion of the district, only a limited amount of work has been done during the year, and some of the parties on Tunnel Terrace, where there is still a large area of unworked ground, have done little or no work for some months.

The claim of Perry and party, recently taken up, although in good working-order, has done very little work during the past year, as the party has been engaged in constructing dams for storing night water, and in repairing the private race held by them. The small amount of work done by them has, however, proved that the claim is a payable one, and as it will take a considerable length of time to put their own race in order, and as the supply from that source when the work is completed will be very small (except in very wet weather), a considerable amount of water from the Waimea Race must be used by them.

The claim commenced at Fox's by Burroughs and party has not yet been properly opened up, and the work of getting the claim in working-order has been greatly retarded by unforeseen cicumstances. On one occasion, a large amount of work done by the party was destroyed by flood-water, and they are still engaged in repairing the damage done, and expect to get on to payable wash in about six weeks.

The Waimea Hydraulic Sluicing Company let their claim and plant on tribute. The tributers have been engaged in sluicing on the terrace above the flat, formerly worked by the company, with fairly successful results, and as the tribute agreement expires in May next, the company will either resume possession, or relet the claim and plant on another tribute agreement.

Several stoppages of the water-supply occurred during the year on account of damage done to the race by floods, but as in no case serious damage was done, repairs were promptly effected, and the water turned on again.

The supply of water was good throughout the year, and no stoppages occurred on that account.

The following tabulated statement shows the sales of water and cost of maintenance of the Waimea Race for the year ended the 31st March, 1904, together with the approximate quantity and value of gold obtained by parties using water from the race.

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.
1903.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		Oz.	£ s. d.
April	39 9 4	39 7 6	55 4 2	34 14 9	24	117	456 6 0
May	54 18 6	28 6 0	38 14 2	61 15 8	28	165	643 10 0
June	60 2 6	94 12 6	50 6 8	47 10 8	30	180	702 0 0
July	73 19 2	42 12 6	55 14 2	58 2 4	28	222	865 16 0
August	65 10 7	78 17 6	65 9 2	45 8 7	26	195	760 10 0
September	60 2 8	76 10 5	51 14 2	36 5 3	27	180	702 0 0
October	83 17 1	59 12 0	75 9 2	56 7 5	27	249	971 2 0
November	66 15 0	35 1 8	67 14 2	80 3 8	26	201	783 18 0
December	43 11 3	65 19 10	87 14 2	57 8 3	26	129	503 2 0
1904.							
January	29 0 0	25 7 0	65 4 2	61 6 6	20	87	339 6 0
February	51 18 4	59 4 4	59 4 2	53 15 6	19	156	608 8 0
March	36 0 10	25 18 4	45 19 2	63 18 0	24	108	421 4 0
Totals	665 5 3	631 9 7	718 7 6	..	25·41 (average)	1,989	7,757 2 0

Branch Race to Callaghan's and Middle Branch of Waimea Creek.

The total sales of water from this branch race for the year ended the 31st March, 1904, amounted to £917 2s., and the expenditure for the some period for gauging, maintenance, and repairs, was £675 16s. 10d., showing a credit balance of £241 5s. 2d. on the transactions for the year.

The average number of miners supplied with water for sluicing from this branch race during the year was 18·5, and the approximate quantity of gold obtained by them was 2,189 oz., having a value of £8,537 2s.

The sales of water for the year were £424 10s. 11d. in excess of the amount during the preceding year, and the approximate quantity of gold obtained was greater by 964 oz., having a value of £3,759 12s.

The average number of mines supplied with water for sluicing from the race was 18·5 during the year, while the number for the previous year was 13·5 showing an increase of 5.

The expenditure on gauging, maintenance, and repairs, during the year was £324 2s. 3d. greater than during the preceding year, but the receipts from sales of water have increased in about the same proportion, and a considerable portion of the expenditure may be reckoned as expenditure on extensions.

During the year the branch race has been extended, and water has been laid on to another claim. There are now seven claims in full work in the Middle Branch Creek. A large amount of work has been done at the dam; the embankment has also been added to, and is now nearly completed to its full height. The work done to the dam has greatly increased its storage-capacity, and will in the future enable a larger quantity of water to be supplied to the claims using water for sluicing in the Middle Branch of the Waimea Creek.

The work done in enlarging the capacity of the dam and in the extension and improvements of the races and branch races may fairly be stated as having a value of £250, which sum, deducted from a total expenditure of £675 16s. 10d., leaves £425 16s. 10d. as the amount actually expended in ordinary gauging, maintenance, and repairs for the year.

The sales of water have increased from £492 11s. 1d. in 1902–3 to £917 2s. in the past year (1903–4), and there is a fair prospect of an increase to another considerable amount during the present year.

In Callaghan's proper, no new ground has been opened up during the past year, and the claims at work have only done a very small amount of sluicing, with very indifferent results. There is no doubt, however, that large extents of payable ground exist in the locality, and that in the future, sluicing on

a large scale will be carried out at Callaghan's, as has recently been the case in the Middle Branch of the Waimea Creek, which was considered of very little account a few years ago.

One of the drawbacks at Callaghan's is that all or nearly all the ground is held by one or two parties, and the same parties hold all the available water-rights, dam-sites, and other mining privileges under old rights. If the ground and other mining privileges were made use of, and worked as intended by the Mining Acts, a great deal more gold would be got, and many more miners employed. The holders should be made to work their ground, and make use of their mining privileges continuously, or steps should be taken to bring about abandonment or forfeiture.

Nearly all the water sold from this branch race was used for sluicing in the flat of the Middle Branch of the Waimea Creek, where there are now seven parties fully at work. The results of the work done have been variable, some claims have turned out well and paid the claimholders considerable dividends beyond wages, but a few have done little more than pay working-expenses, and at least one claim has been worked at a loss, but this loss may be fully made up by future working. Upon the whole the flat in the Middle Branch of the Waimea Creek has been a successful sluicing centre, and the whole of it will eventually be worked.

Besides the seven claims now working, four more are held by parties of miners, but no work has yet been done on them, although the holders of one of them have obtained a right to connect their private tail-race with the Waimea Main Tail-race.

No extension of the Waimea Main Tail-race has been made during the year; it has been maintained in very good condition throughout. A grant of one hundred and thirty-three pounds' worth of free water was authorised by the Mines Department to enable a dangerous portion of the main tail-race to be repaired. The work has been satisfactorily carried out. Of the one hundred and thirty pounds' worth of free water, only ninety-eight pounds' worth had been supplied on the 31st March, 1904.

The following tabulated statement shows the sales of water and cost of maintenance of the Callaghan's and Middle Branch Race for the year ended the 31st March, 1904, together with the approximate quantity and value of gold obtained by parties using water from the race :—

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.
1903.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		Oz.	£ s. d.
April	87 19 2	31 0 0	31 5 0	85 11 6	18	220	858 0 0
May	113 0 10	91 12 6	50 17 6	106 14 10	18	182	709 16 0
June	60 18 4	22 15 0	58 19 0	144 18 2	18	152	592 16 0
July	46 16 8	97 7 6	69 16 3	94 7 4	18	117	456 6 0
August	43 3 9	51 16 3	45 18 9	86 7 4	19	107	417 6 0
September	75 16 3	74 15 0	72 5 10	101 11 1	19	190	741 0 0
October	64 15 8	48 15 9	52 15 0	105 3 6	19	162	631 16 0
November	95 9 0	40 12 6	77 12 3	157 12 6	19	237	924 6 0
December	83 10 8	96 1 0	62 1 0	145 2 2	19	210	819 0 0
1904.							
January..	57 10 10	98 15 6	34 10 0	117 12 6	18	142	553 16 0
February	74 0 0	23 10 0	48 18 9	158 10 0	18	185	721 10 0
March	114 0 10	74 17 0	70 17 6	193 17 0	19	285	1,111 10 0
Totals	917 2 0	751 18 0	675 16 10	..	18·5 (average)	2,189	8,537 2 0

Kumara Race.

The total sales of water from this race for the year ended the 31st March, 1904, amounted to £1,466 2s. 1d., and the expenditure on gauging, maintenance, and repairs, for the same period was £1,612 12s. 10d., showing a debit balance of £146 10s. 9d. on the transactions for the year.

The average number of miners supplied with water for sluicing from the race was 33·08, showing a decrease of about seven as compared with the previous year, and the approximate quantity of gold obtained by them was 2,934 oz., having a value of £11,442 12s.

The sales of water were £62 12s. 3d. less than during the preceding year, and the quantity of gold obtained was less by 122 oz., representing a decrease in value of £475 16s.

The expenditure on gauging, maintenance, and repairs, during the year was less by £72 3s. 8d. than during the previous year, and all the dams, races, branch races, tunnels, and siphons, have been kept in a thorough state of repair, and are now in good working-order.

There have been no parties sluicing into No. 2 channel during the past year, as all the payable ground for which it was available has been worked out.

Four parties have been sluicing into No. 3 channel during the year, but they were not working continuously, as most of them ran out of fall, and could not send away sufficient wash to make the work payable. None of the claims however have been abandoned, and new or partially new tail-races will have to be driven on a lower gradient to work the remaining portion of the claims. In some places the county road interferes with the working of considerable areas of payable ground.

About 950 ft. of the No. 3 channel deviation has now been driven, or about one-half of the total length. The whole of the portion driven has been securely timbered and lathed, and most of it boxed. The work so far as it has been constructed is a very creditable job, and the lines and levels have been well kept. Although the ground that will be opened up by this deviation will not be of an exceedingly rich character, a considerable area will be worked that could never have been worked otherwise.

In No. 4 channel the original two parties are still at work, and they are both sluicing away a very large quantity of material. None of the ground being worked by them is rich, but the large quantity of wash sent through their sluice-boxes enables them to pay expenses and leave a small margin beyond ordinary wages. Both parties have still a very large area of unworked ground similar to that now being worked by them, so that they are sure to have workable ground for many years to come.

Five parties are at work sluicing into No. 5 main tail-race, and all of them are sending away large quantities of wash-dirt, but the ground being worked is of a very poor character, and all have to work long hours in their endeavour to make both ends meet. All the parties are expecting to meet with more payable ground in the future than they have had in the past.

The three parties working through private races are not on very rich ground, but they are all making fair wages, and are apparently satisfied with their prospects.

There has been more than sufficient water for all requirements throughout the year, and no time has been lost by the miners on account of the supply of water being insufficient.

The attached table shows the number of days in each month on which water was going to waste over the dams, the total quantity lost, and also the number of holidays on which no water was used for sluicing.

Month.	Water running over Dam.	Quantity of Water lost.	Holidays.	No Water for Channel.	Dams empty.
1903.	Days.	Days.	Days.	Days.	Days.
April	4	3	6	..	..
May	10	6	..	..	..
June	7	3½	..	..	..
July	10	24	..	..	..
August	8	6	..	..	..
September	4	8	..	..	..
October	4	40	..	..	..
November	1	½	..	..	..
December	10	15½	8	..	..
1904.					
January	6	7	6	..	..
February	3	4½	..	..	..
March	11	17	..	..	..
Totals	78	135	20	..	..

Besides the sales of water above referred to, free water was supplied to claims having a succession of poor washings after due inquiry in each case.

The usual quantity of water authorised by the Department, was supplied to each of the main tail-races for flushing purposes—viz., No. 3 channel, twenty-three sluice-heads; No. 4 channel, ten sluice-heads; No. 5 channel, twenty sluice-heads. Quantities much in excess of the above were as a rule supplied, as water was plentiful throughout the year, and it would otherwise have gone to waste, but no less than the above quantities was supplied at any time.

Water was also supplied to the Borough of Kumara for fire-purposes, and to the miners for washing up free of charge.

The following tabulated statement shows the sales of water, and cost of maintenance of the Kumara Race for the year ended the 31st March, 1904, together with the approximate quantity and value of gold obtained by parties using water from the race :—

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.
1903.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		Oz.	£ s. d.
April	81 9 7	5 0 0	111 7 0	1,049 4 3	31	164	639 12 0
May	142 12 0	62 0 0	143 1 2	1,129 16 3	29	284	1,107 12 0
June	115 2 1	109 6 6	126 19 6	1,135 11 10	26	230	897 0 0
July	159 11 8	75 0 0	155 13 2	1,220 3 6	25	320	1,248 0 0
August	144 13 9	176 5 0	139 15 7	1,188 12 3	40	290	1,131 0 0
September	132 12 6	82 0 0	127 14 9	1,239 4 9	39	264	1,029 12 0
October	114 10 0	138 0 0	112 19 6	1,215 14 9	40	230	897 0 0
November	148 0 0	..	132 10 3	1,363 14 9	32	296	1,154 8 0
December	96 13 6	158 0 0	124 19 6	1,302 8 3	39	194	756 12 0
1904.							
January	66 14 9	47 0 0	125 17 0	1,322 3 0	32	134	522 12 0
February	139 1 0	80 0 0	169 5 3	1,381 4 0	32	278	1,084 4 0
March	125 1 3	90 0 0	142 10 2	1,416 5 3	32	250	975 0 0
Totals	1,466 2 1	1,022 11 6	1,612 12 10	..	33·08 (average)	2,934	11,442 12 0

The following table shows the result of working the Kumara Water-race for the twenty-one years from the 1st April, 1883, to the 31st March, 1904 :—

SUMMARY showing the RESULT of WORKING the KUMARA WATER-RACE for Twenty-one Years, from 1st April, 1883, to 31st March, 1904.

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	626 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	88 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 6	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	..	..	..	..	..
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	5,569 5 7	39·78	1,943 8 7
			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	..	..	..	..	..	..	..
Water sold ..	1900–1901	{1 10 0 / 1 0 0}	108 8 6	259 2 0	167 4 3	220 5 9	265 12 4	220 6 10	235 19 2	143 2 5	111 0 1	122 2 7	196 2 1	132 5 0	2,181 11 0	..	..	..	..	..	..
Free	1900–1901	..	34 7 6	49 6 3	35 18 1	41 5 0	44 4 4	53 8 8	61 14 4	51 3 8	50 17 5	12 15 8	..	..	..	435 0 11	..	..	..	..	..
Free, No. 5 Channel	1900–1901	..	68 18 2	14 1 3	47 10 0	78 18 1	21 14 4	4 4 5	4 4 4	26 11 3	11 17 6	1 12 1	13 8 1	12 16 8	..	..	..	305 16 2	2,922 8 1	45·91	2,077 16 10
			211 14 2	322 9 6	250 12 4	340 8 10	331 11 0	277 19 11	301 17 10	220 17 4	173 15 0	136 10 4	209 10 2	145 1 8	..	..	..	..	..	..	..
Water sold ..	1901–1902	1 0 0	203 18 9	236 8 2	199 19 2	209 17 9	174 8 7	172 4 10	215 9 6	213 17 1	167 15 7	127 11 6	161 15 10	167 5 5	2,250 12 2	..	..	..	..	..	..
Free	1901–1902	..	8 12 6	15 15 0	12 15 0	7 17 6	7 12 1	6 5 0	9 7 6	7 3 9	5 6 3	19 17 6	10 10 0	..	..	111 2 1	..	..	2,361 14 3	48·0	1,706 10 0
			212 11 3	252 3 2	212 14 2	217 15 3	182 0 8	178 9 10	224 17 0	221 0 10	173 1 10	147 9 0	172 5 10	167 5 5	..	..	..	..	..	..	..
Water sold ..	1902–1903	1 0 0	116 16 1	161 7 4	103 12 10	120 2 10	142 19 3	135 11 8	101 9 10	133 2 9	131 17 1	94 8 9	145 0 8	147 5 3	1,528 14 4	..	..	..	..	..	..
Free	1902–1903	..	6 8 4	3 2 3	16 7 9	32 7 10	47 17 7	34 10 5	36 5 5	28 8 9	23 2 1	15 5 0	25 15 5	1 10 0	..	271 0 10	..	..	1,799 15 2	38 37	1,684 16 6
			123 4 5	164 9 7	120 0 7	152 10 8	190 16 10	170 2 1	137 15 3	161 11 6	154 19 2	109 13 9	170 16 1	148 15 3	..	..	..	..	..	..	..
Water sold ..	1903–1904	1 0 0	81 9 7	142 12 0	115 2 1	159 11 8	144 13 9	132 12 6	114 10 0	148 0 0	96 13 6	66 14 9	139 1 0	125 1 3	1,466 2 1	..	..	..	..	..	..
Free	1903–1904	..	7 16 3	17 7 11	25 8 4	..	33 6 10	29 7 1	36 13 4	38 9 6	9 1 3	21 0 0	25 10 0	19 3 4	..	263 3 10	..	..	1,729 5 11	36·5	1,612 12 10
			89 5 10	159 19 11	140 10 5	159 11 8	178 0 7	161 19 7	151 3 4	186 9 6	105 14 9	87 14 9	164 11 0	144 4 7	104,172 5 9	13,539 13 8	2,375 15 9	3,308 15 11	123,396 11 1	..	35,853 15 1

Waimea-Kumara Water-races.

The following tabulated statement shows the revenue, cost of maintenance, approximate quantity of gold obtained, and the number of men employed in sluicing in claims using water from the whole of the Government water-races in the Waimea-Kumara district for the year ended the 31st March, 1904:—

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.
1903.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		Oz.	£ s. d.
April	208 18 1	75 7 6	197 16 2	1,169 10 6	73	501	1,953 18 0
May	310 11 4	181 18 6	232 12 10	1,298 6 9	75	632	2,460 18 0
June	236 2 11	226 14 0	236 5 2	1,328 0 8	74	562	2,191 16 0
July	280 7 6	215 0 0	281 3 7	1,372 13 2	71	659	2,570 2 0
August	253 8 1	306 18 9	251 3 6	1,320 8 2	85	592	2,308 16 0
September	268 11 5	233 5 5	251 14 9	1,377 1 1	85	634	2,472 12 0
October	263 2 9	246 7 9	241 3 8	1,377 5 8	86	641	2,499 18 0
November	310 4 0	75 14 2	277 16 8	1,601 10 11	77	734	2,862 12 0
December	223 15 5	320 0 10	274 14 8	1,504 18 8	84	533	2,078 14 0
1904.							
January..	153 5 7	171 2 6	225 11 2	1,501 2 0	70	363	1,415 14 0
February	264 19 4	162 14 4	277 8 2	1,593 9 6	69	619	2,414 2 0
March	275 2 11	190 15 4	259 6 10	1,674 0 3	75	643	2,507 14 0
Totals	3,048 9 4	2,405 19 1	3,006 17 2	..	77 (average)	7,112	27,736 16 0

The following is a schedule of claims that have been sluicing on the Kumara Goldfield during the year ended the 31st March, 1904, showing the number of men in each claim, fall and width of boxes in each tail-race, number of sluice-heads of water used in sluicing, number of cubic yards of wash sluiced away per hour, and the name of race from which the water was supplied:—

Name of Party.	Number of Men employed in each Claim.	Fall to 12 ft. in Tail-race.	Width of Boxes in Tail-race.	Number of Sluice-heads used in Sluicing.	Auriferous Wash sluiced away per Hour.	Race from which the Water is supplied.	Remarks.
		Inches.	Inches.	Heads.	Cub. yds.		
No. 3 channel—							
Light and party ..	5	6	22	10	60	Kumara	Sluiced three months.
Rochford and party	4	8	22	10	80	,,	Sluiced six weeks.
Brandt and party ..	3	5	22	10	50	,,	Sluiced seven months.
Neville and party ..	2	5	22	10	50	,,	Sluiced six months.
No. 4 channel—							
Cullen and party ..	6	7	24	20	140	,,	Sluiced twelve months.
Long Tunnel Co. ..	8	7	26	22	154	Private	Sluiced twelve months.
No. 5 channel							
Burger and party ..	5	8	24	10	80	Kumara	Sluiced eleven months.
Thomson and party	4	8	24	10	80	,,	Sluiced twelve months.
Thorn and party ..	4	8	24	10	80	,,	Sluiced nine months.
Morgan and party ..	3	8	24	10	80	,,	Sluiced eleven months.
Giffney and party ..	5	7	26	11	77	,,	Sluiced twelve months.
Private races—							
Pascoe and party ..	5	7	26	16	112	,,	Sluiced eleven months.
Arnerich and party	2	8	24	15	120	Private	Sluiced five months.
Stubbs and party ..	3	8	32	22	176	,,	Sluiced three months.

Kumara Deep-level Tunnel.

No prospecting nor work of any kind has been done in the Kumara Deep-level Tunnel during the past year, except the expenditure of the sum of £10 authorised by the Mines Department for clearing out the tunnel and timbering a dangerous portion. Some private parties are however prospecting the deep levels, from the face of the terrace facing the Teremakau, in one instance, with payable results.

Wainihinihi Race.

The supply of water from the Wainihinihi Race has been good throughout the year, and has been of great service in the Waimea District, but none of the water was required for Kumara, as the ordinary supply was quite sufficient. No breaks or stoppages of any kind occurred, although several very large floods took place during the year, and the race has been maintained in good order and condition.

I have, &c.,

Alex. Aitken,

The Under-Secretary, Mines Department, Wellington. Manager, Water-races, Kumara.

Mr. R. MURRAY, Manager, Mount Ida and Blackstone Hill Water-races, Naseby, to the Under-Secretary, Mines Department, Wellington.

SIR,— Naseby, 7th May, 1904.

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, 1904:—

MOUNT IDA WATER-RACE.

The total sales of water from the Mount Ida Race during the year amounted to £1,367 16s. 11d., a falling-off of £153 19s. 8d. from that of last year. The expenditure on maintenance and repairs for the same period was £1,284 18s. 6d., a decrease of £120 11s. 4d. on that of last year. The total cash received was £1,362 0s. 9d. On account of payment in advance, free water to the value of £80 15s. 10d. was supplied, and free water for washing up was also supplied to the value of £120 5s. 4d. The total value of water supplied from this race during the year amounted to £1,568 18s. 1d. The average number of miners supplied with water was 44, a decrease of 7·16 on that of last year. The approximate quantity of gold obtained by parties using water from this race was 1,671 oz., valued at £6,434.

The season on the whole has been a very dry one. On the 28th May it began to rain, ending in snow; hard frost immediately setting in, the miners were compelled to knock off on the 6th June. A thaw set in on the 3rd July, and the water was turned on again on the 6th July; on the evening of the 10th July it began to snow so heavily, that by 7 o'clock next morning there was fully 18 in. on the ground, and it continued all day till evening, when there was 2 ft. of snow on the streets of Naseby, 3 ft. at Hill's Creek, and 3 ft. 6 in. at St. Bathan's. Hard frost set in, when all mining ceased. The maintenance-men had great difficulty in getting away from their huts. The race being in rock for a considerable length from the reservoir outward towards the Wedderburn siphon, I made a start on the 18th August to widen it, as although it was snowing and freezing intermittently, it allowed of this being done. On the 24th August, I started with the cleaning-out of the race, reached the reservoir on the 3rd September, turned the water on from it, and the mines were at work on the 4th. While doing this, I had to side and roof-lath some of the sets in the east Eweburn tunnel. The weather continued so dry, with sharp frosts at night, that the work of cleaning the race was finished on the 19th October, as also the widening to the Idaburn. From the Idaburn inward to Coalpit Gully, a distance of eighteen miles, it has a width of 6 ft. in the bottom. By the middle of November, the supply in the race became so low, that in the reservoir supplementing it was reduced to 9 ft., when rain set in, raining daily for a week with slight falls of snow on the range. The reservoir being closed down, the water rose in it to a depth of 48 ft. Several thunderstorms broke on the two upper sections, filling the race in parts badly, necessitating assistance to the maintenance-men to clean it out. From this date (18th November) to the end of February the weather continued so exceptionally dry and hot, that the miners were on half-time during the latter half of February. Advantage was therefore taken to widen the race from Home Gully dam to Finger-post dam, and to put a larger gauge-box in the latter, and an extra pipe under the Naseby–Palmerston Road; this had to be done to supply another elevating claim recently started in the vicinity. On the 29th February and the 1st March it rained so heavily, that it caused the heaviest floods along the line of the race from the Idaburn (23 miles) to the head since I took charge, filling in the race at the creek-crossing from the Idaburn to the head creek with rough angular mountain shingle, and causing three of the creeks to shift their course above the race. The men being on their respective sections when the rain began, were able to close down the gates in the race at the creek-crossings, and to open all the by-washes along it, thus saving further damage from being done, other than two small breaks. A large amount of stuff was brought down into the race on the east side of the West Eweburn steep sideling, but this being near home, I was able to get enough strength to clean it out in one day and to put the water on again. Labour in the district being scarce, men had to be obtained from St. Bathan's to assist in fixing up the creeks; this work being now in progress.

The number of days on which no water was supplied to the miners was—Winter, 55; Christmas, 1; New Year, 1; Good Friday, 1; also, on account of the water being short, the miners knocked off for the two days of Naseby races. This allowed the supplying-dams to get filled. The total stoppages amounted to sixty days as compared with forty-four last year; the winter was a very long and severe one.

Fourteen hydraulic elevating claims have been at work in the district during the year, ten being supplied by the Government race. Only three parties are now working in the Maori bottom, making small wages. The season has been a bad one (so far as water-supply is concerned) for the private water-race owners.

BLACKSTONE HILL WATER-RACE.

The total sales of water from this race during the year amounted to £67 3s. 9d. The total cash received was £67 3s. 9d., an increase of £7 0s. 6d. over that of last year. The total cost of maintenance and repairs was £4 8s., caused principally in stopping leakage from rabbit-holes. Small sandbanks are accumulating in the race, which will have to be cleaned out in the spring; this can be done at a small cost.

Only two parties (the same number as last year) are using water from this race. It, like the Mount Ida Race, was short of water on account of the dry season. R. Johnstone being off for ten days, and C. Rose nine days.

I have, &c.,

R. MURRAY, Manager.

The Under-Secretary, Mines Department, Wellington.

REPORT OF GOVERNMENT GEOLOGIST.

Mr. ALEXANDER McKAY, F.G.S., Government Geologist, to the UNDER-SECRETARY FOR MINES, Wellington.

SIR,— Mines Department, Wellington, 31st May, 1904.

I have the honour to state that since the date of my last report, for the year 1902–3, I have been unable to prosecute geological examinations in the field, due to the continuance of the disability under which I labour. I have, however, fully employed my time during the yearly interval in preparing original matter, and supervising the printing of this, and the report of Professor Sollas, and in preparing photographic illustrations from rock-slices for the same.

The photographs taken to illustrate the report above mentioned are 350 in number. These are of larger size than usually illustrate works of the kind, and are being reproduced 7 in. by 5 in., as full-page illustrations for the work descriptive of the Rocks of Cape Colville Peninsula. This work, owing to the necessity of forwarding proofs to England and awaiting their return, cannot issue from the press for at least another year, a delay which, however regrettable, is unavoidable.

During the present year a meeting of the Australasian Association for the Advancement of Science was held at Dunedin, and at this a resolution was passed drawing attention to the fact that very large collections of fossils were stored in the Colonial Museum at Wellington, which, in the interests of science, it was most important should be examined and described to enable a right comprehension of the geological work which has already been carried out within these Islands. A committee being set up for the purpose, memorialised the Government on the matter of the resolution. The Government postponed consideration of the recommendation made till after the appointment of a Geologist in August or the months following.

This led to a consideration of the condition of the fossils stored in the Museum, and on the appointment of Mr. Hamilton as Curator and Director, it seemed desirable that the stored fossils and rocks should be removed to other quarters. It has been stated that some five hundred boxes of fossils, many of which have yet to be opened for the first time, are stored in the cellars of the Museum. This misrepresents the case, as rocks and fossils taken together in measurement are not likely to greatly exceed 1,000 cubic feet. The stored rocks and fossils require to be overhauled, mainly owing to the fact that they have been packed away in boxes liable to be attacked by the weevil worm, which, as a matter of fact, has done much damage, and rendered many of the boxes insecure, and the pile formed of them unstable, necessitating an immediate repacking of the whole mass—some 250 boxes. Besides these, large collections are stored in the fossil-room, and some thirty thousand specimens are on show in the south wing and gallery of the Museum, all of which must be seen to, lest record of them be lost.

That the stored duplicates be made readily accessible it is absolutely necessary that provision be made whereby each box is reachable without interfering with the others, so that exchange collections may be readily prepared, and the whole of any particular collection made available for study.

I have already drawn your attention to the fact that a storage-shed is urgently required, fitted with racks in which each box, numbered, and contents known, may be placed conveniently and readily accessible when wanted. Such convenience, owing to want of space in the Museum is more than ever urgently needed, and the work of repacking and arranging, which, during the past month has been begun, absolutely necessitates the providing of storage such as above suggested, otherwise from sheer congestion of space the work must come to a standstill. In the meantime, boxes are being stored under the show-cases in the Museum, a proceeding, which to say the least of it, is most inadvisable, yet under present circumstances is unavoidable.

As in future the Government Geologist's office is to be in the new building in Sydney Street, I would suggest that convenient thereto should be erected temporary or permanent storage for the Geological Survey collections that at present overcrowd the Colonial Museum, and are elsewhere stored in the laboratory building and fossil-room.

I have, &c.,

ALEX. McKAY, Government Geologist.

The Under-Secretary, Mines Department, Wellington.

WATER-CONSERVATION.

Mr. T. PERHAM, A.M.Inst.C.E., to the UNDER-SECRETARY FOR MINES, Wellington.

SIR,— Mines Department, Wellington, 14th June, 1904.

I have the honour to forward my report for the year ending the 31st December, 1903.

NORTH ISLAND.

An increased domestic water-supply for the Thames Borough being required, an examination of a proposed site for a new storage-reservoir was made about 50 chains above the present intake-weir—the source of supply on the Waikiekie Stream—but on account of the sharp inclination of the bed of the stream, and want of space for a reservoir to impound any useful quantity of water, and also the scheme involving the expense of a high dam for the purpose, it was abandoned, and recommendations made for raising the weir into a dam, the material for building which to be excavated from the space to be occupied by the reservoir, and thus by creating a greater depth, increase the capacity of the conservation.

In addition to the above, examinations were made with a view to ascertain the most suitable position for a storage-reservoir, drawing water from the Council's statutory supply from the Thames County

Water-race of thirty gallons per head of population, provided by "The Thames Water-supply Act, 1880." Several sites were examined, and one ultimately selected in what is known as the Borough Paddock. Contour-surveys have been made, and plans and report are now in course of preparation.

This is the only work undertaken in connection with water-conservation by me for this Department.

REPORTS, ETC., FOR OTHER DEPARTMENTS.

Preceding the arrival of Mr. Hancock, electrical engineer from America, to report upon the generation of electricity by water-power from the various falls and rivers in the colony, I was directed by the Hon. the Minister for Public Works to gauge and ascertain the volume and capability of the falls and rivers in both the Islands for Mr. Hancock's information and guidance during his personal inspection.

The following rivers, falls, and rapids were reported on: Kawarau Falls, Waitaki, Opihi, Rangitata, Rakaia, and Waimakariri Rivers in the South Island, and Wairau, Huka, Taratiatia, Te Reinga, Waikaretaheke Falls, and rapids at Hinemapuhia below Waikaremoana and Waiohine River in the North Island.

I was assisted in this work by Messrs. J. Meenan, H. Dickson, A. Ross, and C. E. Armstrong, Assistant Engineers of the Public Works Department.

A survey for a high-pressure domestic water-supply, sanitary improvements, drainage of flax-swamp land, and various other matters has also been carried out for the Tourist Department at Hanmer Springs and the Government Spa, Canterbury, and a report and numerous plans have been forwarded to the Public Works Department.

I have, &c.,
T. PERHAM, A.M.Inst.C.E.,
Engineer, Water-conservation.

The Under-Secretary, Mines Department, Wellington.

MINE-MANAGERS' AND BATTERY-SUPERINTENDENTS' EXAMINATION PAPERS.

QUESTIONS USED IN EXAMINATION OF MINING MANAGERS FOR CERTIFICATES.

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

1. State fully the names of mines in which you have been employed during the last five years, giving the dates and names of the managers of said mines, with the nature of such employment.
2. Describe fully how you would sink a shaft, (*a*) through quicksand, (*b*) through swelling rock, if you had an influx of 300 gallons of water per minute to contend with.
3. If you were sinking a shaft through hard rock and had to use a draw-pump 14 in. in diameter to keep down the water, describe fully how you would continue sinking to allow the work to be done advantageously.
4. If you were opening out a chamber from a shaft in swelling rock, describe fully how you would do the work. Also give the dimensions of such a chamber if there were thirty men employed on the level leading from such chamber.
5. If you were stoping out a lode 30 ft. wide with a bad roof, state fully how you would secure it to insure safety to the workmen employed.
6. What distance apart would you construct passes if the lode was 20 ft. wide? Give your reasons fully, and state the dimensions of the passes.

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 by sketch how to timber a shaft used for pumping and winding if you had to use three lifts of pumps with a column 18 in. in diameter. State fully how the work is done at the change of lifts, and give the minimum dimensions of the pumping-compartment, also the dimensions of timber you would use in the shaft.
2. Describe how you would fit the timber for a main level for a double line of rails. (*a.*) Give a sketch of how you would place the timber in the level. (*b.*) Give the dimensions of legs and cap pieces, and also the width and height of the level inside the timber.
3. In constructing a rise on a lode lying on an inclination of 60° from the horizon when the hanging-wall was soft and formed the roof of the uprise, state how you would put in timber to keep the roof secure.
4. Show by sketch how you would fit the timber for a rectangular shaft (*a*) if planking were used, (*b*) if framed sets were used, and state what system you prefer, giving your reasons fully.
5. If you were timbering a main level where the width between the props at the top was 4 ft. 6 in., the cap pieces were 14 in. in diameter, and the legs 6 ft. high, show by calculation the diameter of the props required to be equal to the breaking-strain of cap.
6. Show by sketch how you would timber passes, and give your reasons fully.

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

1. What is meant by "ventilation" in a mine, and state fully how it is accomplished?
2. What gases are likely to be found in quartz or alluvial mines, what are their specific gravities, how are they detected, and what effect have they on the workmen?

3. If a mine were ventilated from two shafts of equal depths and levels, the temperature in one was 60° Fahr. and in the other 80° Fahr., which shaft would be the upcast, and show by calculation the ventilating-pressure?

4. If an airway 6 ft. by 6 ft., 500 ft. long, was passing 20,000 cubic feet of air per minute, and the air was split in three divisions, namely:—

First airway, 5 ft. by 6 ft., 1,000 ft. long;
Second airway, 5 ft. by 5ft., 300 ft. long;
Third airway, 5 ft. by 5ft. 6in., 1,200 ft. long;

show by calculation the quantity of air passing through each division, allowing the pressure to be the same.

5. Describe fully, and also show by sketch, how you would ventilate an adit level if it were constructed for such a distance into a hill that the air became too impure for the workmen, if you could not use a fan.

6. In sinking a winze it was found that the air became foul to such an extent that the men could not burn a candle. The cause was a current of air passing through the level. The same current prevented the back of the level being stoped—*i.e.*, over the said winze. What simple, inexpensive method, without compressed air, &c., would you adopt to work both places?

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

1. Describe fully how you would construct a brickwork dam in a drive 6 ft. by 7 ft. in underground workings, when there was solid rock, to withstand a head of water 200 ft. high. Give the thickness of the brickwork and the pressure in pounds on the face of the dam.

2. If you were approaching old workings with a drive where the water was standing, say, 150 ft. above the level of the drive, what precautions would you adopt? Give your reasons fully.

3. In sinking a shaft through solid rock a large influx of water was met with in a fissure 100 ft. below the surface, describe fully how you would dam back the water.

4. If you had to dam back water in an underground level the height of 5 ft., state fully the description of dam you would construct.

SUBJECT E.—*Blasting, and the Use of Explosives.*

1. In putting up a rise in compact homogeneous rock, show by sketch the arrangement of boreholes you would put in the face for blasting, and describe by numbers the rotation in which you would fire them, giving your reasons fully.

2. If you were using dynamite in very frosty weather, what provisions would you make to thaw it if you found it frozen?

3. At what temperature do nitro-glycerine explosives freeze, and what effect has severe cold on them as explosives?

4. If you were using dynamite, describe how you would charge the borehole in the bottom of the shaft if the top of it was on a level with water in the shaft.

5. If you were using a pump in a shaft that you were sinking, what provision would you make before firing the boreholes to protect the pump?

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

1. Make up a pay-sheet in proper form for a fortnight's wages in connection with a mine, a day being reckoned as 8 hours, 9 men at 1s. 0½d. per hour, 46 men at 11¼d. per hour, 27 men at 10½d. per hour, and 15 boys at 7¼d. per hour.

2. The distance between two levels in a mine is 109 ft. vertical; the lode is lying on an inclination of 1 in 1¾. The length of the lode exposed on levels is 301 ft.; the width of lode on the upper level is 8 ft. at the north end, at 40 ft. along it is 3 ft. 6 in., at 100 ft. it is 1 ft. 6 in., at 250 ft. it is 5 ft. 6 in., and at 301 ft. it is 4 ft. 10 in. On the lower level the width at north end is 10 ft. 3 in., at 40 ft. along it is 6 ft. 6 in., at 100 ft. it is 7 ft. 4 in., at 250 ft. it is 8 ft. 6 in., and at 301 ft. it is 6 ft. 7 in. wide. Show by calculation the number of tons the block contains, allowing 15 ft. cubic feet to the ton.

3. From 3,500 tons of quartz 2,769 oz. 9 dwt. 14 gr. of bullion was obtained, containing gold and silver. The bullion was 0·4357 fine in gold. Taking the value of fine gold to be £4 4s. 3d. per ounce, and of silver 2s. 5½d. per ounce, required the value of the gold and silver in the bullion.

4. A lode was shown by assay to contain 19 dwt. 11 gr. gold and 27 oz. 14 dwt. 6 gr. silver to the ton. After treatment at the reduction-works 94·4 per cent. of the gold and 47·7 per cent. of the silver was obtained. Required the value of the gold and silver recovered, taking the value of fine gold at £4 4s. 3d. and of silver at 2s. 5½d. per ounce.

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

Oral.

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

1. Describe how you would place three lifts of pumps of 15 in. diameter in a shaft, and what arrangements are necessary at the change of lifts for balancing the rods, &c. Give full details of all the work required to fix the pumps permanently in position.

2. If you had to use plunger pumps of 15 in. diameter in a shaft to lift water from a depth of 900 ft., the travel of the plunger to be 200 ft. per minute, one-tenth to be allowed for windage,

leakage, &c., required the number of gallons lifted per minute, and the dimensions of the cylinders of a direct-acting condensing steam-engine to do the work, allowing that the initial pressure of steam entering the high-pressure cylinder was 100 lb. per square inch, and that steam was cut off at half-stroke.

3. Describe fully the difference between an ordinary draw-lift pump and a Cameron pump; also state the depth that the water can be lifted from below the pump, and the reason for same.

4. Being a watchman in a mine during Sunday, and finding the bucket in the drawing-lift lifting but little water through the failure of the bucket, and no man being available to change it, what remedy would you adopt to keep the lift raising the maximum quantity of water until the men arrived on Monday?

5. If you had to lift 720,000 gallons of water from a depth of 400 ft. every twenty-four hours, required the diameter of the cylinder of a steam-engine to do the work, if geared 4 to 1 with initial pressure of 80 lb. of steam per square inch, to be cut off at $\frac{5}{8}$-stroke and piston-speed 400 ft. per minute.

6. Having completed a sump and wanting to fix a plunger lift before opening out levels, in the event of the water rising in the shaft above the plunger owing to the failure of the clack, what method would you adopt to replace the clack without moving the lift?

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

1. If you had to haul 500 tons of ore, including weight of trucks, in 8 hours, in 10-ton loads, up an incline of 35° for a distance of 3,000 ft., and if 3 minutes was taken up in stoppages every load, required the horse-power necessary to do the work.

2. How do you ascertain the strength of a haulage-rope? Show by calculation the breaking-strain and also safe working-load on (*a*) a hemp rope 6 in. in circumference, (*b*) an improved plough-steel rope 3 in. in circumference.

3. If 40 tons of ore per hour had to be lifted with two cages from a depth of 500 ft., and one-third of the time was occupied in taking trucks off and putting trucks on cage, required the diameter of cylinders of a double high-pressure direct-acting winding-engine to do the work, the initial pressure of steam being 120 lb. per square inch, to be cut off at five-eighths of the stroke, and the travel of the pistons 450 ft. per minute.

4. What provision would you make to prevent an accident taking place from overwinding or from the winding-rope breaking? Describe fully the appliance you would adopt.

5. If a winding-engine were placed on the opposite side of hill from the shaft, and the winding-ropes had to pass through a tunnel in which there were two sharp bends, describe fully how you would lead the winding-rope, also how you would ascertain when the cages were landed on the brace.

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

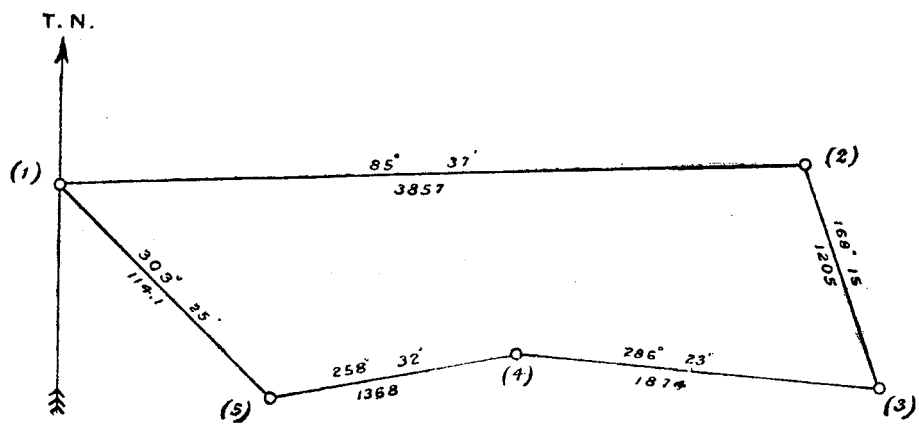
1. Give diagrams of faults and dislocations you have met with in New Zealand, and describe fully their effects on lodes, and how to overcome the difficulties met with.

2. The direction of a lode is north and underlying to the east, a break is met with running at an angle from the lode of 25° east which cuts off the lode: describe fully where you would expect to find the lode again.

3. What is meant by "mullock-bars" in lodes, and what are their effect?

SUBJECT K. — *A Knowledge of Underground Surveying, and of making Plans of the Underground Workings, showing the Dip or Inclination and Strike of the Reefs or Lodes.*

1. It is required to prove the accuracy of the underground traverse survey shown on the accompanying diagram. This the candidate will do by computing the co-ordinates of the stations, and then tabulating them (on form herewith) in the usual manner, treating station (1) as zero or origin. The total distances on the meridian and perpendicular of all the other stations are to be shown also with reference to station (1). (Maximum number of marks for question = 50.)
[NOTE.—The distances are given in links.]



2. Describe shortly (illustrated by diagrams) the most approved manner of ascertaining the dip or inclination and strike of reefs and lodes. (Maximum number of marks for question = 25.)

3. (*a.*) Describe for either the Y pattern or transit theodolite your method of making the line of collimation of the telescope and the level attached to the latter parallel to each other. (Maximum number of marks for question = 12½.)

(*b.*) Describe shortly the tests you would apply to your prismatic compass to prove its quality, and especially to determine the variation or declination of the needle compared with the local triangulation or standard bearing. (Maximum number of marks for question = 12½.)

[NOTE.—The full 100 marks will be awarded for correct and satisfactory answers to the three foregoing questions, but the candidate has the option of substituting question No. 4 below for questions Nos. 3, (*a*), and 3, (*b*), above.]

4. How would you ascertain the exact area of the figure delineated in question No. 1? (The candidate is not required to undertake the computations, but must indicate clearly the method he recommends and give the formulæ.) (Maximum number of marks for question = 25.)

SUBJECT. L. — *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. Describe the rocks in New Zealand in which gold and silver, copper, antimony, zinc, lead, and tin are found, and the different forms in which these metals occur. State fully the character of the lodes in which they are found.

QUESTIONS TO BE USED IN EXAMINATION OF BATTERY-SUPERINTENDENTS FOR CERTIFICATES.

SUBJECT A.—*The Different Modes of reducing and pulverising Ores.*

1. Give the name of the company or employer under which you have worked during the past two years, and the nature of the employment.

2. Describe fully the details of a Krupp and also of an Otis mill. Give your opinion as to the class of ore best suited for reduction in these mills respectively, and state your reasons for same.

3. Describe fully how you would construct a stamp-mill, and the different appliances you would use in connection with such mill to reduce and pulvervise the ore to render it suitable for amalgamation or for treatment by the cyanide process respectively.

4. Required the horse-power of a double-cylinder condensing-engine, also the diameters of the cylinders, having 100 lb. initial pressure of steam on high-pressure cylinder cut off at three-quarter stroke, the piston-speed to be 450 ft. per minute, to work a stamp-battery of 60 stamps weighing 1,100 lb., each making 90 drops per minute with an 8 in. drop.

5. Show by calculation the diameter of a nozzle required to work a pelton wheel under a head of 150 ft., to give sufficient power to work 20 heads of stamps 1,000 lb. each with a 7 in. drop, making 96 drops per minute.

SUBJECT B.—*Amalgamating-machines.*

1. Describe fully the amalgamation appliances which you have used, and with the principles of working of which you are thoroughly acquainted.

2. Describe the difference between a Wheeler pan, a McKay pan, and a Watson-Denny pan. Give the speed at which each should be worked, the number of tons of pulverised ore each can treat in eight hours, and the horse-power required to work them.

3. Describe the difference between a Frue and Triumph vanner, also between a Luhrig and a Wilfley concentrator. Give the speed at which each should be worked, the length of stroke, and the horse-power required to work them.

4. State fully the use of concentrators, and the class of ore most suitable for concentration.

5. Explain the use of a settler, the reason it is required, and how it is worked.

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

1. What effect has an electric current on quicksilver; and how would you apply it? Give your reasons fully.

2. How would you purify quicksilver that was sickened with antimony and lead? Describe fully.

3. Explain step by step how you would coat copper plates with quicksilver, how you would remove the amalgam, and how you would keep the plates always in good condition.

4. After removing the amalgam from plates or from amalgamating-machines, how do you separate the quicksilver from the bullion?

5. Give your experience in using quicksilver for amalgamating gold or silver, and how you have applied it.

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

1. Describe fully how you would treat slimes with a cyanide-solution, and how you would extract the solution from the slimes.

2. Show by sketch an agitator, and describe fully its use and how you would remove the pulp from it.

3. Show by sketch a filter-press; describe fully how it is used, how it is filled, and the time occupied in treating the charge.

4. How do you ascertain the strength of a cyanide-solution for the ore you have to treat?

5. Give the composition of KCN and its atomic weight.

6. Describe fully the remedies you would apply if any workman showed signs of cyanide poisoning.

7. Show by calculation how many tons of a 10-per-cent. solution of KCN would be required to make up 20 tons of a sump solution containing 0·01 per cent. of KCN to 0·2 per cent. solution.

8. How many tons of 0·25 per cent. solution of KCN would 3·2 tons of ⅜ per cent. solution make, using a sump solution of 0·09 per cent. KCN?

9. Describe fully, step by step, how the ore is treated with cyanide-solution in vats, how the solutions are extracted, and the number of washes given after the first solution has been drawn off.

10. A vat is 25 ft. in diameter and 7 ft. in depth: if it was filled with ore to within 1 ft. 4 in. of the top, how many tons of ore would it contain, allowing 23 cubic feet to the ton?

11. Describe fully zinc extractors, how the bullion is extracted from the solution, and how the zinc extractors are cleaned up.

12. Describe fully all appliances required in a complete cyanide plant to treat 50 tons of ore and 20 tons of slimes per day.

SUBJECT E.—*Sampling and Testing of Ores*

1. Carefully describe the various methods with which you are acquainted of sampling ores.

2. In a sample of concentrates containing sulphides of iron, copper, zinc, lead, and antimony what tests would you use to demonstrate the presence of the various metals, and how would you estimate the percentage of each?

3. How would you detect manganese and chromium (*a*) when occurring together, (*b*) when found singly in a rock?

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

1. If 7 men and 4 boys did a certain piece of work in 30 hours, how long would it take 13 men and 2 boys to do the same work, allowing a man to do $1\frac{2}{5}$ as much work as a boy?

2. Give the value of 20,000 oz. 9 dwt. of bullion containing gold and silver. On assay it contained gold 0·2416 fine, taking gold at £4 4s. 3d. per ounce and silver at 2s. 5d. per ounce.

3. If you had £414 given you to pay 40 men employed at reduction-work—namely, 20 men in battery, 12 in cyanide-works, 3 at water-race, and 4 in assay office—and if each of the men in the battery got $\frac{7}{8}$ of the wages of each man in the cyanide-works, and each of the men in the cyanide-works got $\frac{7}{8}$ of the wages of each man in the assay office, and each of the men on the water-race got $\frac{3}{4}$ of the wages of each man in the cyanide-works, how much did each man receive?

4. A pole 100 ft. high is standing in a vertical position, the top of it breaks and touches the ground in a truly horizontal direction, without being completely severed at the break, at 40 ft. from the base: show by calculation the length of the two pieces.

5. Raise 0·04537 to the 5th power, and extract the cube-root of that number.

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

Oral.

LIST OF MINE-MANAGERS AND BATTERY-SUPERINTENDENTS WHO HAVE OBTAINED CERTIFICATES UNDER THE MINING ACTS.

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., Waiomo.
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.
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-managers' Certificates, issued on Production of Certificate from a Recognised Authority outside the Colony, under "The Mining Act, 1886," "The Mining Act, 1891," and "The Mining Act, 1898."

Argall, W. H., Coromandel.
Beckwith, L. H., Wellington.
Datson, J., Manaia.
Griffiths, A. P., Auckland.
Griffiths, H. P., Auckland.
Hailey, R. C., Dunedin.
McKenna, Thomas, Dunedin.
Molineaux, H. S., Gore.
Rich, F. A., Auckland.
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.

* Deceased since issue of certificate.

FIRST-CLASS SERVICE CERTIFICATES AS MINE-MANAGERS—*continued.*

First-class Mine-managers' Certificates, issued after Examination, under "The Mining Act, 1898.'

Arscott, R., Waihi.
Allen, Henry, Waihi.
Barker, B., Thames.
Bennie, Boyd, Waihi.
Blenkhorn, C., Coromandel.
Bolitho, Joseph, Reefton.
Bower, J. W., Coromandel.
Buddle, Frank, Coromandel.
Bull, C. W., Waihi.
Carroll, A. M., Reefton.
Carter, R. P., Waihi.
Clouston, R. E., Kaitangata.
Cooper, J. H., Thames.
Cooper, Thornhill, Waihi.
Cordes, F. M., Karangahake.
Docherty, W. H., Coromandel.
Ellery, John, Reefton.
Evered, N. J., Waihi.
Fry, S., Waimangaroa.
George, M. T., Waihi.
Grayden, P., Thames.
Goldsworthy, C., Karangahake.
Hooker, John, Coromandel.
Hitchcock, W. E., Barewood.
Irwin, Samuel, Waihi.
Jackson, G. T., Waihi.
Johnson, J. H., Coromandel.
Langford, G. S., Waihi.
Lawn, Nicholas, Reefton.
McConachie, W., jun., Waihi.
MacDuff, R. B., Thames.
MacLaren, J. A. J., Coromandel.
McMahon, J. H., Reefton.
McMahon, T., Reefton.
Morrison, William, Waihi.
Moye, Michael, Reefton.
O'Sullivan, J. W., Thames.
Rabe, John, Thames.
Stewart, F., Waihi.
Thomson, Thomas, Waihi.
Tucker, E. S., Coromandel.
Turnbull, E. V., Coromandel.
Turner, C. E., Murchison.
Watson, J. L., Thames.
Webber, J. H. A., Reefton.
Weir, Thomas, Waihi.
Whyte, N. McG. H., Waihi.
Williams, C., Thames.
Wilson, Allan, Thames.
Wood, P. H., Reefton.

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.

First-class Mine-managers' Certificates, issued to Inspectors of Mines, by virtue of Office under the Mining Acts, 1886, 1891, and 1898.

Binns, G. J., Dunedin.
Cochrane, N. D., Westport.
Gordon, H. A., Wellington.
*Gow, J., Dunedin.
Green, E. R., Dunedin.
Hayes, J., Dunedin.
McLaren, J. M., Thames.
Tennent, R., Westport.
Wilson, G., Thames.

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.

*Deceased since issue of certificate

SECOND-CLASS SERVICE CERTIFICATES AS MINE-MANAGERS—*continued.*

Second-class Mine-managers' 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 after Examination, under "The Mining Act, 1898."

Bennie, Boyd, Coromandel.
*Cahill, T. M., Upper Kuaotunu.
Carroll, John, Upper Kuaotunu.

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.

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.
McKenna, T. N., Tararu.
McLellan, William, Waitekuri.
Mellett, Richard Sheridan, Waitekauri.
Napier, James, Karangahake.
Noble, James R., Karangahake.
Park, James, Thames.
Shepherd, Henry Franklin, Waihi.
Sims, C. F., Tararu.
Walker, James A., Kuaotunu.
Wilson, Arthur E., Waihi.
Wilson, James Kitchener, Auckland.

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.
*Carter, Samuel, Thames.
Clarke, J. L., Thames.
Clarke, R., Waitekauri.
Clarke, W. J., Waihi.
Day, A. T., Thames.
Dixon, Clement, Waihi.
Doveton, G. D., Thames.
Fleming, G. C. S., Thames.
Fuller, J. P., Kuaotunu.
Gray, J. W., Waihi.
Hayward, F. W., Komata.
Horn, G. W., Kuaotunu.
Jackson, J. H., Paeroa.
Jones, Achison, Waihi.
Kidd, F. D., Thames.
Laurie, D. B., Karangahake.
Lee, J. W., Reefton.
Macdonald, W., Waihi.
McKenzie, H. J., Thames.
McMicken, S. D., Thames.
Morgan, P. G., Thames.
Morrin, W. S., Thames.
Noakes, H. L., Waihi.
Raithby, R. W., Reefton.
Robinson, J. R., Waitekauri.
Stafford, B. H., Waihi.
Taylor, C. H., Tararu.
Thorpe, A. H., Thames.
Vercoe, R. B., Thames.
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.
Airey, Hubert, Karangahake.
Allen, D. V., Thames.
Allen, H. E., Wellington.
Auld, J. B., Crushington.
Baker, W. H., Thames.
Banks, E. J., Thames.
Barrett, J. J., Karangahake.
Barron, Wm. E., Waikino.
Baskett, E. G., Karangahake.
Bidlake, A. E., Waiomo.
Bishop, T. O., Reefton.
Blackadder, Wm., Crushington.
Bradley, R. J. H., Karangahake.
Browne, E., Waitekauri.
Burns, William, Waiomo.
Bush, E. F., Parawai.
Bush, H. R., Thames.
Brown, F. M., Karangahake.
Brown, J. E., Komata.
Campbell, Colin, Thames.
Carpenter, W. E., Karangahake.
Carter, S., Waihi.
Carroll, John, Kuaotunu.
Chappell, G. A., Karangahake.
Clark, John L., Waihi.
Coote, J. M., Thames.
Corbett, G. L., Waitekauri.
Couper, J., Thames.
Cowles, R. K., Crushington.
Crompton, H., Maratoto.
Croucher, Herbert, Waihi.
Dawson, B., Ellerslie.
Donnelly, Thomas, Waihi.
Draffin, Eugene, Kuaotunu.
Ellis, L. L., Waitekauri.
Empson, J. B., Karangahake.
Evans, J., Walhi.
Evans, W. B., Reefton.
Ewen, H. F., Auckland.
Fletcher, H. T., Katikati.
Fraser, J. M., Reefton.
Fuller, John P., Kuaotunu.
Gardner, E. A., Reefton.
Gow, E. A., Crushington.
Grayden, J., Waitekauri.
Grayden, Peter, Thames.
Grumitt, P. H., Thames.
Gwilliam, Ben., Karangahake.
Hargraves, E. P., Waihi.
Hay, Adam, Karangahake.
Hazard, T. R. C., Waitekauri.
Hitchcock, W. E., Barewood.
Hogg, B., Karangahake.
Horn, G. W., Kuaotunu.
Jones, R. D., Karangahake.
Kidd, R. B., Waitekauri.
Kingsford, A., Karangahake.
Launder, G. H., Waitekauri.
Lawless, L. J., Paeroa.
Lovelock, J. E., Crushington.
Mackay, John, Crushington.
Maltman, A., Reefton.
McEwin, J. A., Reefton.
Montgomery, A. E., Opitonui.
Motherwell, Wm., Waihi.
Moyle, W. T., Upper Tairua.
Orbell, G. S., Waikouaiti.
Pond, H. C., Auckland.
Quick, J. N., Thames.
Reid, J. E., Great Barrier.
Reynolds, E. A., Auckland.
Roberts, H. C., Waihi.
Rodden, Wm., Lyell.
Rosewarne, R. H., Thames.
Royse, W. G., Reefton.
Sanford, A. G., Waihi.
Stephens, H., Dunedin.
Thomson, G. W., Bendigo.
Thurlow, J. R., Coromandel.
Tomlinson, A., Karangahake.
Tomlinson, W. F., Dunedin.
Turnbull, E. V., Waihi.
Ulrich, G. A. C., Komata.
Ulrich, Herstall, Whangapoua.
Watson, A. B., Waitekauri.
Watson, A. P., Crushington.
Watson, J. R., Reefton.
White, A. S. H., Karangahake.
Wilson, A. P., Crushington.
Williams, A. C. Waihi.

* Deceased since issue of certificate.

Dredgemasters' Certificates, without examination, issued under "The Mining Act, 1898," and Amendment Acts 1901 and 1902.

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

Dredgemasters Certificates, after examination, issued under "The Mining Act, 1898," and Amendment Acts, 1901 and 1902.

Baird, William G., Clyde.
Bardsley, John James, Cromwell.
Borthwick, Robert, Alexandra.
Bourke, John, Clyde.
Briggans, Thomas, Alexandra.
Briggans, William, Alexandra.
Clark, D., Callaghan's Creek.
Coup, George, Albertown.
Curno, C. B., Alexandra.
Donaldson, John, Lawrence.
Eaton, Edgar W., Alexandra.
Elder, D. D., Roxburgh.
French, T. E. K., Three-channel Flat.
Gibson, William H., Cromwell.
Gillstrom, Carl A., Berlin's.
Guyton, James, Dunedin.
Harliwick, Matthew, Roxburgh.
Hewetson, Sydney, Nelson Creek.
Holden, John, Cromwell.
Hopburn, D. O., Alexandra.
Hughes, John L., Miller's Flat.
Johnston, John, Maori Gully.
Johnston, Louis, Beaumont.
Junker, Frank J., Berlin's.
Kane, William, Clyde.
Kane, William, Cromwell.
Kitto, John, Clyde.
Linney, William, Island Block.
Matthews, A. A., Three-channel Flat.
McDonald, C. J., Waitere.
McDonald, G., Alexandra.
McGregor, Dougald S., Alexandra.
McLean, John. Roxburgh.
Mollison, William, Stillwater.
Monson, C. H., Miller's Flat.
Morel, L. H., Inangahua Junction.
Murray, H. B., Cromwell.
Murray, Robert John, Canvastown.
Nelson, Edgar, Brunnerton.
Nelson, George L., Brunnerton.
Orr, William W., Cromwell.
Poppelwell, William, Alexandra.
Rait, Hume, Albertown.
Ray, J. F., Bannockburn.
Reiderer, Edward, Cromwell.
Rooney, J. B., Roxburgh.
Rumble, Chas., Ngahere.
Rumble, Joseph, Miller's Flat.
Sanders, W. J., Ahaura.
Sawle, J., Cromwell.
Taylor, J. T., Dunedin.
Wathen, James, Miller's Flat.
Watson, E. H., Collingwood.
Wescombe, Alfred L., Island Block.
Williams, Frederick, Alexandra.
Wilson, George, Marsden.
Wilson, Stephen L., Inangahua Junction.
Wood, W. W., Cromwell.
Woodhouse, F., Bannockburn.

NUMBER of MACHINES employed in QUARTZ-MINING in the AUCKLAND DISTRICT, and the VALUE thereof, for the Year ended the 31st December, 1903.

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.								
										£
Waihi	31	3,914	..	340	6	..	..	..	21	264,740
Ohinemuri ..	16	1,342	..	305	10	..	..	..	36	149,710
North Hauraki ..	24	706	..	168	5	..	..	..	49	94,896
South Hauraki ..	27	1,252	..	462	52	..	..	..	184	179,892
Te Aroha ..	1	20	..	10	1	..	..	..	2	5,600
Great Barrier Isl'd	14	125	..	20	..	..	..	..	3	11,125
	113	7,359	..	1,305	74	..	..	..	295	705,963

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 ended the 31st December, 1903.

[NOTE.—Under heading "Power Employed" the letter H. indicates hand, O. oil, S. steam, and W. water-power.]

Locality where Machine is situated.	Name of Machine.	Name of Owners	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 or retort'g.	Number of Furnaces for Assay Purposes.	Number of Plants for Cyanide Process.	Number of Concentrating Plants.	Power employed.
Coromandel County.															
Coromandel ..	Telephone ..	Old Hauraki Gold-mining Co.	..	15	..	8	..	..	3	3	1	..	..	1	S
" ..	Union Beach Tailing Plant	Frank Shephard ..	..	..	..	1	1	3	..	1	1	..	1	..	W
" ..	Scotty's	F. Hodge	..	9	..	8	..	..	1	2	1	..	..	..	W
" ..	Success	"	..	10	..	4	..	..	1	1	1	..	..	..	S
" ..	Public battery ..	School of Mines Board in trust	..	5	..	2	..	..	1	1	1	..	..	..	O
Tokatea	Tokatea	Royal Oak of Hauraki Gold-mining Co.	1	15	..	8	..	..	2	2	1	..	..	..	W, S
" ..	West Tokatea ..	West Tokatea Gold-mining Co.	..	3	..	2	..	..	1	1	..	..	..	..	S
Waikoromoriki ..	Four-in-hand ..	Four-in-hand Gold-mining Co.	..	10	..	2	..	..	1	1	1	1	..	..	S
Cabbage Bay ..	Vizard's ..	C. Blasch	..	4	..	1	..	..	1	1	1	..	..	..	W
" ..	Macoronic ..	Macoronic Syndicate ..	..	5	..	2	..	..	1	1	1	..	..	..	O
Opitonui ..	Opitonui ..	Kauri Freehold Gold Estates Gold-mining Co.	2	40	..	..	..	5	2	2	2	2	1	2	S
" ..	Owera	Ditto	..	16	..	4	..	..	2	2	1	..	..	..	S
Kuaotunu ..	Try Fluke ..	Kuaotunu Syndicate ..	..	16	..	3	..	2	2	2	1	1	1	..	S
"	Great Mercury ..	Thompson and others ..	..	10	..	1	..	1	4	2	1	1	1	..	S
"	Irene	Waitaia Gold-mining Co.	..	10	..	2	..	1	2	1	1	1	..	..	S
"	Handsworth ..	Louis Woodcock ..	..	3	..	1	..	..	1	1	..	..	..	..	W
Mahakirau ..	Mahakirau ..	New Zealand Government	..	3	..	1	..	..	1	1	..	..	..	..	S
Thames County.															
Gumtown	Welcome Jack ..	Welcome Jack Syndicate	..	5	..	2	..	..	1	1	1	..	..	..	S
"	Kapowai ..	M. O'Conner	..	8	..	3	..	..	1	1	1	..	..	..	S
"	Big Beetle ..	Big Beetle Gold-mining Co.	1	2	..	2	..	..	2	1	..	..	..	..	W
Tapu	Bullion	H. Adams	..	15	..	4	..	..	2	2	1	..	..	..	W
"	Mahara Royal ..	Mahara Royal Gold-mining Co.	..	20	..	18	..	..	2	2	1	..	..	1	W
Waiomo	Monowai ..	Monowai Gold-mining Co.	1	10	..	1	1	2	1	2	1	..	..	1	S, W
Puru	Puru	Puru Consolidated ..	..	10	..	2	..	..	1	1	1	..	..	..	W
Tararu	Tararu	A. Trower	..	30	..	6	..	3	2	1	1	1	1	..	S, W
"	New Alburnia ..	New Alburnia Gold-mining Co.	..	20	..	7	..	2	1	3	1	..	..	..	W
"	Eclipse	Eclipse Gold-mining Co.	..	10	..	3	1	..	1	2	1	..	..	..	W
"	Chicago	..	..	10	..	2	1	..	1	1	..	..	..	..	W
Karaka	Claremont ..	George Bryant	..	1	..	1	..	..	1	1	..	..	..	..	H
"	Junction ..	McGregor and Taylor ..	..	5	..	1	..	..	1	1	..	..	..	..	W
Hape	Anchor	J. Styak	..	4	..	2	..	..	1	1	..	..	..	..	W, S
"	Fortuna	J. Rabe	..	5	..	2	..	..	1	1	1	..	..	..	W
Kerikeri	Kerikeri ..	M. Fleming	..	4	..	2	..	..	1	1	..	..	..	..	S
Puriri	Puriri	Puriri Gold Estates ..	..	8	..	2	..	..	1	1	1	..	..	..	W

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 ended the 31st December, 1902—*continued*.

Locality where Machine is situated.	Name of Machine.	Name of Owners.	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 or retort'g.	Number of Furnaces for Assay Purposes.	Number of Plants for Cyanide Process.	Number of Concentrating Plants.	Power employed.
Thames County—ctd															
Puriri	Hit or Miss ..	J. McInnis and party ..	..	6	..	2	..	..	1	1	1	..	..	..	S, W
Tairua	Broken Hill ..	Broken Hill Gold-mining Co.	1	20	..	6	..	..	1	1	1	1	1	..	S, W
"	Chelmsford ..	Chelmsford Gold-mining Co.	1	10	..	2	..	..	1	1	1	1	1	..	W
"	Taniwha ..	Taniwha Gold-mining Co.	..	3	..	1	..	..	1	1	1	..	..	..	O
Whangamata ..	Mananu ..	Mananu Gold-mining Co.	1	20	..	1	..	..	1	1	1	1	1	..	S, W
Ohui	Waihui ..	Waihui Gold-mining Co.	..	2	..	1	..	..	1	1	..	..	..	..	W
Omahu	Sheet Anchor ..	Tillsley Bros.	..	2	..	1	..	..	1	1	1	..	..	..	S
"	Klondyke ..	Klondyke Gold-mining Co.	..	5	..	2	..	..	1	1	..	..	..	..	W
Thames Borough.															
Thames Borough ..	Kuranui ..	Kuranui Gold-mining Co.	..	20	..	6	..	..	2	2	1	..	..	..	W
" ..	Moanataiari ..	A. and G. Price ..	..	60	..	21	4	..	2	6	1	1	1	1	S, W
" ..	Comer's ..	Kuranui-Caledonian Gold-mining Co.	..	20	..	5	..	..	2	2	1	..	..	..	W
" ..	Judd's	Charles Judd	..	..	..	2	9	..	..	..	1	..	..	..	W
" ..	May Queen ..	May Queen Syndicate ..	..	33	..	8	3	..	2	3	2	..	..	..	W
" ..	Waiotahi ..	Waiotahi Gold-mining Co.	..	21	..	5	..	..	2	2	1	..	..	..	S
" ..	Fame and Fortune	Fame and Fortune Gold-mining Co.	..	21	..	16	..	..	2	2	1	..	..	..	W
" ..	School of Mines ..	School of Mines Board in trust	1	2	..	1	1	1	3	3	1	4	1	..	W
" ..	May Queen Extended	May Queen Extended Gold-mining Co.	..	23	..	14	..	..	2	4	1	..	..	..	W
" ..	Fairmile ..	W. Manning	..	..	..	1	..	..	1	1	1	..	..	..	W
" ..	Bank of New Zealand	Bank of New Zealand ..	..	..	..	..	..	..	2	2	1	1	..	..	H
" ..	Bank of New South Wales	Bank of New South Wales	..	..	..	..	..	..	2	2	1	1	..	..	H
Ohinemuri County.															
Paeroa	Bank of New Zealand	Bank of New Zealand ..	1	..	..	..	..	..	2	1	1	1	..	..	H
Karangahake ..	Crown	New Zealand Crown Mines (Ltd.)	2	60	..	4	..	..	2	2	1	1	1	..	S, W
" ..	Woodstock ..	Woodstock Gold-mining Co.	2	40	..	2	..	..	2	2	1	1	1	1	S, W
" ..	Talisman ..	Talisman Extended Gold-mining Co.	4	60	..	5	..	..	3	3	1	1	1	1	S, W
Komata	Komata.. ..	Komata Reefs Gold-mining Co.	2	20	..	4	..	..	2	2	1	1	1	1	S, W
Waitekauri ..	Waitekauri ..	Waitekauri Gold-mining Co.	2	40	1	6	..	..	3	2	1	1	1	1	S, W
" ..	Golden Cross ..	Ditto	1	10	..	2	..	..	2	2	1	1	1	..	S, W
" ..	Grace Darling ..	"	1	10	..	3	..	..	1	2	1	1	1	..	S, W
" ..	Jubilee	Jubilee Gold-mining Co.	..	10	..	5	2	1	1	2	1	1	1	..	S
Maratoto	Waitekauri Extended	Waitekauri Extended Gold-mining Co.	1	40	..	3	..	..	2	2	1	1	1	..	W
"	Maratoto ..	Maratoto Gold-mining Co.	..	10	..	2	..	..	2	1	1	1	1	..	S
"	Hikutaia Gold Syndicate	Hikutaia Gold Syndicate	1	5	..	2	..	..	1	2	1	1	..	..	S
Waihi	Waihi	Waihi Gold-mining Co. ..	2	90	..	5	..	..	3	6	1	1	1	1	S, W
"	Union-Waihi ..	" ..	2	40	..	2	..	..	2	2	1	1	1	1	S, W
Waikino	Waikino ..	" ..	4	200	..	12	..	..	3	4	1	1	1	1	S, W
Piako	Waiorongomai ..	E. H. Hardy	1	10	..	4	1	..	2	2	1	1	1	1	W
City of Auckland ..	Fraser's	Fraser Bros.	..	..	1	2	2	2	2	1	1	..	..	..	S
Great Barrier Island	Barrier Reefs ..	Henry Brett	1	20	..	3	..	2	3	2	1	1	1	1	S
Auckland	Bank of New Zealand	Bank of New Zealand ..	..	..	..	1	1	2	6	4	2	..	..	..	W

STATEMENT showing QUARTZ-CRUSHING MACHINES and APPLIANCES for treating Auriferous Ores in the MARLBOROUGH, NELSON, and WESTLAND MINING DISTRICTS for the Year ended the 31st December, 1903.

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 Plants for Chlorination.	Number of Concentrating Plants.	Power employed.
Marlborough County.																
Top Valley ..	Wellington ..	T. W. Young and P. K. Watty	..	10	..	1	..	..	..	1	..	..	..	..	..	S
" ..	Jubilee	Jubilee Gold-mining Co. (Limited)	..	10	..	..	..	..	..	..	..	..	..	..	..	W
Collingwood County.																
Taitapu	Golden Ridge ..	Taitapu Gold Estates (Limited)	2	20	..	4	..	1	1	2	1	1	..	..	..	W
"	Golden Blocks ..	Golden Blocks (Taitapu) (Limited)	..	8	..	..	..	1	1	2	..	..	..	..	..	S
Buller County.																
Mokihinui ..	Red Queen ..	Red Queen Gold-mining Co. (Limited)	..	2	..	..	..	..	..	..	..	..	..	..	..	W
Waimangaroa ..	Britannia ..	Britannia Gold-mining Co. (Limited)	..	5	..	..	..	..	..	..	..	..	..	..	..	W
" ..	Stony Creek ..	Stony Creek Gold-mining Co. (Limited)	..	10	..	2	..	..	2	2	..	..	..	..	..	W
Lyell	Alpine Extended ..	Alpine Extended Gold-mining Co. (Limited)	..	20	..	4	..	1	1	2	..	..	1	..	..	W
Inangahua County.																
Bourke's Creek ..	Gardiner's ..	W. P. Gardiner and Sons ..	..	..	..	12	..	..	1	2	..	..	..	..	..	W
Victoria Range ..	Kirwan's Reward ..	Kirwan's Reward Gold-mining Co. (Limited)	..	15	..	..	..	..	..	1	1	..	..	..	..	W
Capleston ..	Welcome	Welcome Gold-mining Co. (Limited)	..	5	..	..	..	..	..	2	1	..	1	..	..	S
Reefton	Golden Fleece ..	Consolidated Goldfields of New Zealand (Limited)	1	20	..	1	..	..	..	2	1	..	1	..	1	S
"	Wealth of Nations ..	Ditto	..	20	..	1	..	..	2	2	1	..	1	..	..	W
"	Keep-it-Dark ..	Keep-it-Dark Quartz-mining Co. (Limited)	..	20	..	4	..	1	1	2	1	1	1	..	1	W
"	Progress Mines ..	Progress Mines of New Zealand (Limited)	3	65	..	1	..	..	2	2	1	1	1	1	1	W
"	New Scotia ..	New Scotia Gold-mining Co. (Limited)	..	10	..	1	..	..	1	1	..	..	1	..	..	S
"	Golden Lead ..	Golden Lead Gold-mining Co. (Limited)	..	10	..	..	..	..	1	..	..	..	..	..	..	W
"	Last Chance ..	Alex. Fleming and party ..	..	5	..	..	..	..	1	1	..	..	..	..	..	S
"	New Inkerman ..	New Inkerman Mines (Limited)	..	15	..	3	..	..	1	1	1	1	1	..	1	S
"	Big River ..	Big River Gold-mining Co. (Limited)	..	10	..	4	..	..	2	2	1	1	1	..	..	W
"	King George ..	St. George Gold-mining Co. (Limited)	..	5	..	..	..	..	1	1	..	..	..	..	..	W
"	Inglewood ..	Inglewood Gold-mining Co. (Limited)	..	10	..	..	..	..	..	..	..	..	..	..	..	S
Grey County.																
Paparoa Ranges ..	Mount Paparoa ..	Mount Paparoa Gold-mining Co. (Limited)	..	10	..	1	..	..	1	1	..	..	..	..	..	W
Ten-mile Creek ..	Taffy	Taffy Gold-mining Co. (Limited)	..	5	..	1	..	..	..	1	..	..	..	..	..	W
			6	310	..	40	..	4	19	30	9	5	9	1	4	

QUARTZ-CRUSHING MACHINES and APPLIANCES for treating Auriferous Ores in the SOUTHERN MINING DISTRICT for the Year ended the 31st December, 1903.

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 smelting.	Number of Furnaces for Assay Purposes.	Number of Plants for Cyanide Process.	Number of Concentrating Plants.	Power employed.
Tuapeka County—															
Waipori	Otago Pioneer Quartz	Otago Pioneer Quartz (Waipori) Gold-mining Co.	1	10	..	..	..	..	..	1	1	1	..	1	S
"	Bella	Bella Gold-mining Syndicate	..	5	..	..	..	..	..	..	..	..	..	..	W
Bruce County—															
Waitahuna ..	Burnt Creek ..	Table Hill Quartz-mining Co.	..	10	..	..	..	..	..	..	..	..	..	..	W
" ..	Canada	Canada Reef Gold-mining Co.	..	10	..	..	..	..	..	..	..	..	..	..	W
Lake County—															
Queenstown ..	Invincible ..	Invincible Gold-mining Co.	..	10	..	7	..	..	2	..	..	..	1	1	W
Macetown	Premier	Premier Sunrise, late Indian Glenrock (Wynaad) Co.	1	20	..	2	..	1	4	1	1	1	1	..	W
"	Tipperary ..	Westralia and New Zealand Gold Exploration Co.	..	10	..	1	..	1	..	1	1	1	1	..	W
Skipper's	Shotover ..	Shotover Quartz-mining Co.	..	10	..	..	..	..	..	..	..	..	..	..	W
Bullendale ..	Achilles	Achilles Gold-mines ..	1	30	..	..	..	..	6	1	1	1	..	..	W
Bannockburn ..	Day Dawn ..	Lawrence Bros. ..	..	4	..	1	..	..	1	..	..	..	..	..	W
" ..	Carrick	James Lawrence ..	..	10	..	..	..	..	2	..	..	..	..	..	W
" ..	Star of the East ..	Lawrence Bros. ..	..	10	..	..	..	..	..	..	..	..	..	..	W
Bendigo	Bendigo ..	Cromwell Proprietary Gold-mining Co.	..	20	..	4	..	..	4	1	1	1	..	..	S, W
"	..	Macabe and Son ..	..	2	..	..	..	..	..	..	..	..	..	..	W
"	..	Bendigo Tailings Syndicate	..	..	..	..	..	..	..	..	1	1	..	..	..
"	Alta	Alta Gold-mining Co. ..	..	4	..	..	..	..	1	..	..	..	..	..	O
Fiord County—															
Te Oneroa ..	New Star ..	New Star Gold-mining Co.	..	10	..	14	..	..	..	..	..	..	..	..	S
" ..	Alpha Dawn ..	Alpha Dawn Gold-mining Co.	..	..	..	..	..	..	..	..	..	..	..	..	..
" ..	Golden Site ..	Golden Site	..	10	..	4	..	..	..	..	..	..	..	..	W
Vincent County—															
Bald Hill Flat ..	Excelsior ..	F. W. Gray	..	3	..	..	..	..	1	1	1	..	..	..	W
" ..	White's Reef ..	R. T. Symes	..	5	..	1	..	..	1	1	1	..	..	..	W
Waniototo County—															
Hyde	Mount Highlay ..	Mount Highlay Gold-mining Co.	..	12	..	..	..	..	..	..	..	..	..	..	W
Rough Ridge ..	Great Eastern ..	F. H. Perry	..	5	..	..	1	..	1	1	1	..	..	..	W
Maihemo County—															
Macrae's	Ounce	Ounce Gold-mining Co. ..	..	8	..	..	..	..	..	..	..	..	..	..	W
"	Bonanza ..	L. O. Beal, jun. ..	1	5	1	..	1	..	1	1	1	..	..	..	W
"	Mills's United ..	H. N. Mills and Son ..	..	5	..	1	..	..	1	1	1	..	..	..	S
"	Golden Point ..	W. and G. Donaldson ..	1	10	1	1	2	..	1	1	..	..	..	1	O
Stoneburn ..	Golden Bar ..	Golden Bar Gold-mining Co.	..	10	..	..	..	..	1	1	1	..	..	..	S
" ..	Gilvern	A. G. Davies	..	5	..	..	..	..	1	1	..	..	..	..	W
Taieri County—															
Hindon	Parker's	A. Parker	..	4	..	..	..	..	1	..	..	..	..	..	O
Barewood	Barewood ..	Barewood Gold-mining Co.	..	5	..	..	..	..	1	1	..	..	..	..	S
			5	262	2	36	4	2	30	14	12	6	3	2	..

STATEMENT showing the QUANTITY of QUARTZ CRUSHED and GOLD OBTAINED in the HAURAKI MINING DISTRICT for the Year ended the 31st December, 1903.

Locality and Name of Mine.	Average Number of Men employed.	Quartz crushed.	Gold obtained.		Estimated Value.
			Amalgamation.	Cyanide.	
		GREAT BARRIER ISLAND.			
Barrier Reefs	2	Tons cwt. qr. lb. 782 tailings	Oz. dwt. ..	Oz. dwt. 948 0	£ s. d. 190 2 2
		COROMANDEL COUNTY.			
Cabbage Bay—					
White Star	4	0 0 0 14	3 19	..	10 17 3
Macaronic	4	55 0 0 5	21 15	..	57 3 2
	8	55 0 0 19	25 14	..	68 0 5
Waikoromiko—					
New Tandem	2	10 6 0 6	257 11	..	744 5 6
Four-in-Hand	5	28 0 3 1	218 14	..	632 13 10
Whangapoua	1	0 10 0 0	2 0	..	6 0 0
	8	38 16 3 7	478 5	..	1,382 19 4
Tokatea—					
Royal Oak	48	2,331 4 3 7	1,787 1	..	4,663 13 3
Harbour View	7	17 11 1 15	185 5	..	483 5 1
Sea View	3	62 0 0 0	154 19	..	423 0 7
	58	2,410 16 0 22	2,127 5	..	5,569 18 11
Kapanga—					
Kapanga S.Q.C.	5	468 0 0 0	154 19	..	378 18 8
Golden Spark	5	0 5 0 0	3 0	..	8 12 6
Kathleen Crown	1	2 0 0 0	7 8	..	22 4 0
	11	470 5 0 0	165 7	..	409 15 2
Hauraki Block—					
Old Hauraki	20	809 4 0 20	2,145 5	..	6,556 18 3
Bunker's Hill	24	464 12 3 13	2,589 6	..	7,556 18 3
Hauraki Freeholds	10	60 2 0 15	636 1	..	1,947 3 6
	54	1,333 19 0 20	5,370 12	..	16,061 0 0
Tiki—					
Vaughans	2	1 0 0 6	42 3	..	115 15 6
Progress Castle Rock	2	3 0 0 0	15 0	..	41 5 0
	4	4 0 0 6	57 3	..	157 0 6
Kennedy Bay—					
Omoho	1	0 0 1 16	3 16	..	10 9 0
Kuaotunu—					
Mariposa	2	135 0 0 2	195 17	..	440 16 4
Great Mercury	6	235 0 0 0	366 18	..	871 7 9
Waitaia	24	1,072 0 0 0	1,611 14	..	4,537 2 3
Handsworth	2	40 0 0 0	391 2	..	993 0 0
	34	1,482 0 0 2	2,565 11	..	6,842 6 4
Opitunui—					
Kauri Freehold Gold Estates	4	1,857 0 0 0	..	2,052 0	4,605 3 9
Sundries	20	322 11 2 11	403 16	..	573 8 2
Totals	202	7,974 9 1 19	11,197 9	2,052 0	35,680 1 7
		THAMES COUNTY AND BOROUGH.			
Tapu—					
Mahara-Royal	10	1,012 0 1 6	570 0	..	1,729 0 0
Puru—					
Puru Consolidated	4	415 0 3 16	171 6	..	461 14 6
Waiomo—					
Monowai	35	1,387 0 0 0	..	..	1,584 8 8
Tararu—					
Temple Bar	2	5 0 0 0	45 7	..	113 7 6
Argosy	2	0 0 1 5	22 7	..	55 7 6
Totals	4	5 0 1 5	67 14	..	168 15 0
Moanataiari—					
Moanataiari	54	603 0 1 23	744 9	..	2,021 6 4
New Alburnia	..	478 11 0 3	781 6	..	2,089 7 1
Kuranui-Caledonian	55	793 17 1 13	1,735 7	..	4,707 4 5
	109	1,875 8 3 11	3,261 2	..	8,817 17 10

STATEMENT showing the QUANTITY of QUARTZ CRUSHED and GOLD OBTAINED in the HAURAKI MINING DISTRICT for the Year ended the 31st December, 1902—*continued.*

Locality and Name of Mine.	Average Number of Men employed.	Quartz crushed.	Gold obtained.		Estimated Value.
			Amalgamation.	Cyanide.	
THAMES COUNTY AND BOROUGH—*continued.*					
Waiotahi—		Tons cwt. qr. lb.	Oz. dwt.	Oz. dwt.	£ s. d.
Waiotahi	14	865 0 0 0	1,428 4	..	3,856 15 2
Nonpareil	7	140 0 0 7	159 12	..	451 6 0
Fame and Fortune	15	300 0 1 7	364 11	..	937 1 0
West Coast	2	43 0 0 0	57 15	..	155 18 6
Ballarat	2	28 10 0 0	97 14	..	286 15 9
Golden Drop	2	14 0 0 0	70 4	..	175 10 0
We Two	2	2 0 0 0	16 0	..	40 0 0
	44	1,392 10 1 14	2,194 0	..	5,903 6 5
Kuranui—					
Kuranui	12	22 0 0 0	14 8	..	34 13 8
Grahamstown—					
May Queen Hauraki	18	514 0 0 0	769 7	..	1,949 13 5
Victoria	8	170 0 0 0	212 9	..	586 4 6
	26	684 0 0 0	981 16	..	2,535 17 11
Karaka—					
May Queen Extended	7	385 0 0 0	300 19	..	886 1 11
Claremont	1	0 1 1 10	98 1	..	253 15 6
Bell Rock	1	0 0 1 22	18 15	..	46 17 6
	9	385 1 3 4	417 15	..	1,166 14 11
Otanui—					
Otanui Consols	3	0 0 0 20	32 0	..	70 0 0
Hape—					
Fortuna Hauraki	2	32 10 1 2	74 15	..	205 11 3
Waymouth	2	15 0 0 0	6 0	..	16 10 0
Thames Star	2	3 0 0 0	84 8	..	211 0 0
Ethel Reefs	1	6 0 0 0	3 6	..	8 5 0
Summer Hill	1	5 0 0 8	5 0	..	12 10 0
	8	61 10 1 10	173 9	..	453 16 3
Puriri—					
Miner's Right	2	54 0 0 0	28 11	..	78 10 3
Omahu—					
Klondyke	2	125 0 0 0	17 6	..	41 16 6
We Three	2	2 4 0 0	92 7	..	37 12 1
	4	127 4 0 0	109 13	..	79 8 7
Tairua—					
Tairua Broken Hills	60	6,355 0 0 0	..	12,281 0	21,146 18 3
Chelmsford	1	30 0 0 0	27 19	12 0	47 7 3
Taniwha	2	42 0 0 0	82 1	..	190 1 1
Chester	1	6 0 0 0	22 15	..	51 16 6
	64	6,433 0 0 0	132 15	12,293 0	21,436 3 1
Whangamata—					
Mananu	6	370 0 0 0	166 0	..	333 17 1
Gumtown—					
Kapowai	4	276 10 0 0	233 0	..	547 11 0
Welcome Jack	4	123 0 0 0	282 4	..	539 11 5
Big Beetle	6	235 0 0 0	458 2	..	1,353 1 7
	14	634 10 0 0	973 6	..	2,440 4 0
Sundries (tailings)	7	7,236 0 0 0	812 13	..	2,133 4 1
Sundries	20	50 15 2 27	657 7	..	418 7 8
	27	7,286 15 2 27	1,470 0	..	2,551 11 9
Totals	381	22,145 2 3 1	10,763 15	12,293 0	49,845 19 11
WAIHI BOROUGH.					
Waihi—					
Waihi	1,120	178,473 0 0 0	..	677,873 0	519,445 10 1
			Concentrates	..	82,402 6 4
			From slag	..	1,319 12 4
Waihi Gladstone	6	400 0 0 0	47 10	..	115 3 9
Totals	1,126	178,873 0 0 0	47 10	677,873 0	603,282 12 6
OHINEMURI COUNTY.					
Waitekauri—					
Waitekauri Company	44	947 0 0 0	..	3,959 0	4,521 14 8

STATEMENT showing the QUANTITY of QUARTZ CRUSHED and GOLD OBTAINED in the HAURAKI MINING DISTRICT for the Year ended the 31st December, 1903—*continued.*

Locality and Name of Mine.	Average Number of Men employed.	Quartz crushed.	Gold obtained.		Estimated Value.
			Amalgamation.	Cyanide.	
OHINEMURI COUNTY—*continued.*					
Karangahake—		Tons cwt. qr. lb.	Oz. dwt.	Oz. dw	£ s. d
New Zealand Crown Mines ..	242	35,289 0 0 0	..	40,783 0	78,279 12 1
New Zealand Talisman	170	47,267 0 0 0	91,918 13	91,414 11	94,134 7 11
Woodstock	40	6,184 0 0 0	9,809 11	4,760 14	9,680 12 1
	452	88,740 0 0 0	101,728 4	136,958 5	182,094 12 1
Komata—					
Komata Reefs	96	14,780 0 0 0	9,079 9	38,439 9	37,110 2 9
Hikutaia—					
Hikutaia Gold Syndicate ..	4	312 0 0 0	53 13	116 8	169 1 0
Totals	596	104,779 0 0 0	110,861 6	179,473 2	223,895 10 6
PIAKO COUNTY.					
Waiorongomai—					
Empire and Mammoth	14	1,561 0 0 0	1,728 9	..	4,972 18 2
UMMARY.					
Great Barrier	2	782 0 0 0	..	948 0	190 2 2
Coromandel County	202	7,974 9 1 19	11,197 9	2,052 0	35,680 1 7
Thames County and Borough ..	381	22,145 2 3 1	10,763 15	12,293 0	49,845 19 11
Waihi Borough	1,126	178,873 0 0 0	47 10	677,873 0	603,282 12 6
Ohinemuri County	596	104,779 0 0 0	110,861 6	179,473 2	223,895 10 6
Piako County	14	1,561 0 0 0	1,728 9	..	4,972 18 2
Grand totals, 1903 ..	2,321	316,114 12 0 20	134,598 9	872,639 2	917,867 4 10
„ 1902 ..	2,646	320,904 3 0 14	48,588 10	795,218 6	802,927 9 10
Increase ..	..	..	86,009 19	77,420 16	114,939 15 0
Decrease ..	325	4,789 10 3 22	..	..	..

Number of men employed on development-work and prospecting in the whole district from which no returns of gold have been obtained: 162.

BATTERY RETURNS from QUARTZ-MINES in the MARLBOROUGH, NELSON, and WEST COAST MINING DISTRICTS for the Year ended the 31st December, 1903.

Name and Locality of Mine.	Quartz crushed.	Yield of Gold.	Approximate Total Values.
Marlborough District—	Tons.	Oz. dwt. gr.	£ s. d.
Jubilee, Top Valley	1,711	547 10 11	1,957 7 10
Collingwood District—			
Golden Ridge, Taitapu	5,506	1,961 6 0	8,363 17 5
Golden Blocks, Taitapu	2,409	2,170 1 0	8,230 0 0
Westport District—			
Lady Agnes, Seddonville	75	11 0 14	43 12 9
Red Queen, Mokihinui	86	93 3 20	323 6 8
Britannia, Waimangaroa	505	302 4 7	1,167 18 10
Lyell District—			
Alpine Extended, Lyell	428	169 5 17	637 5 3
Lyell Creek	133	454 6 0	1,787 1 2
Reefton District—			
Welcome, Capleston	1,611	1,143 12 8	4,431 19 1
Kirwan's Reward, Capleston	4,814	1,791 5 6	7,164 7 8
Golden Fleece, Black's Point	14,133	6,384 3 9	26,790 17 8
Wealth of Nations, Crushington	12,385	4,819 14 18	20,422 5 8
Keep-it-Dark, Crushington	12,568	5,282 7 0	20,473 2 2
Progress, Waitahu Survey District	57,114	27,346 4 6	108,217 4 8
New Inkerman, Waitahu Survey District ..	5,247	1,372 10 12	5,252 1 1
Last Chance, Merrijigs	15	85 0 0	344 0 0
United, Merrijigs	211	147 7 6	535 3 11
New Scotia, Merrijigs	744	162 7 14	567 17 6
Big River, Merrijigs	340	453 2 0	1,816 2 10
Inglewood, Murray Creek	172	129 0 0	509 18 9
Grey Valley District—			
Taffy, 10-Mile Creek	303	66 6 2	266 0 0
Mount Paparoa, Paparoa Ranges	1,000	241 15 2	958 2 2
Garden Gully, Paparoa Ranges	10	3 19 18	16 8 0
Totals	121,520	55,137 13 2	220,276 1 1

BATTERY RETURNS from QUARTZ-MINES in the SOUTHERN DISTRICT for Year ended the 31st December, 1903.

Name and Locality of Mine.	Ordinary Quartz crushed.	Retorted Gold.	Value.	Tailings treated.	Gold from Tailings.	Value.
	Tons cwt. qr.	Oz. dwt. gr.	Oz. dwt. gr.	Tons.	Oz. dwt. gr.	£ s. d.
Premier Sunrise (New Zealand), Macetown	2,030 0 0	1,357 2 18	5,442 0 0	47	236 17 3	693 19 2
Shotover, Skipper's	1,003 0 0	464 17 12	1,882 14 0	..	..	..
Alta, Bendigo	82 0 0	28 10 0	86 8 4	..	..	..
Bendigo (late Cromwell Proprietary), Bendigo	127 0 0	103 13 17	367 2 3	..	..	..
Morning Star (New Star Gold-mining Company), Preservation Inlet	99 0 0	26 8 0	95 18 0	..	..	..
Barewood, Barewood	2,083 0 0	1,691 10 0	6,535 18 1	..	100 0 0	391 6 5
T. Park, Canada Reef, near Milton	35 0 0	27 7 0	97 14 0	..	..	..
Sundries	4,876 10 0	1,611 12 22	6,161 0 0	..	..	..
Total	10,335 10 0	5,311 1 21	20,668 14 8	47	336 17 3	1,085 5 7

STATEMENT of VALUE of GOLD WON from QUARTZ CRUSHED for ALL DISTRICTS for Years ended the 31st December, 1902 and 1903.

Mining District.	Year ended the 31st December, 1902.	Year ended the 31st December, 1903.
	£	£
Hauraki	802,927	917,867
Marlborough, Nelson, and West Coast	212,151	220,276
Otago and Southland...	24,534	21,363
Totals	1,039,612	1,159,506*

* Total increase, £119,894.

GROSS TOTALS and VALUE of GOLD PURCHASED by BANKS for Year ended the 31st December, 1902.

Bank.	Gold purchased.	Value.
Hauraki Mining District.		
	Oz. dwt. gr.	£ s. d.
Bank of New Zealand	36,283 2 0	79,532 17 6
Bank of New South Wales	18,874 7 12	34,873 16 6
Totals	55,157 9 12	114,406 14 0
Marlborough, Nelson, and Westland Mining Districts.		
Bank of New Zealand	35,470 0 4	138,106 5 0
National Bank of New Zealand	32,669 2 9	127,805 9 11
Bank of New South Wales	9,843 11 9	38,620 17 2
Union Bank of Australia	2,573 0 0	10,129 0 0
Private buyers	123 1 10	415 14 8
Totals	80,678 16 8	315,077 6 9

GROSS TOTALS and VALUE of GOLD PURCHASED by BANKS for Year ended the 31st December, 1903—*continued*.

Bank.	Gold purchased.	Value.
Otago and Southland Districts.		
	Oz. dwt. gr.	£ s. d.
Bank of New Zealand	95,222 11 0	365,586 13 5
Bank of New South Wales	12,831 5 13	49,622 18 11
National Bank of New Zealand	41,599 13 21	160,882 15 5
Bank of Australasia	12,389 13 0	50,225 0 0
Totals	162,043 3 10	626,317 7 9
Grand totals	297,879 9 6	1,055,801 8 6

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 twenty-two 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 9	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
1886–87.			
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

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.
1887–88.	£ s. d.	£ s. d.	£ s. d.
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 5	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	23,318 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
1892–93.			
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	1,033 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 13 1

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.
1893–94.	£ s. d.	£ s. d.	£ s. d.
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	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
1897–98.			
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

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.
1898–99.	£ s. d.	£ s. d.	£ s. d.
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	1,108 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
1900–1.			
Roads on goldfields	48,835 2 1	44,757 0 1	46,088 4 4
Roads and tracks undertaken by County Councils, subsidised by Mines Department	1,495 8 2	2,882 6 2	3,133 4 10
Works undertaken by prospecting associations and companies, subsidised by Mines Department	2,353 5 10	1,266 11 7	1,033 7 9
Water-races	3,954 1 6	4,251 19 8	50 0 0
Drainage-channels	2,058 0 0	517 0 4	927 7 3
Schools of Mines	1,598 2 1	1,598 2 1	..
Prospecting deep levels	..	..	..
Water-conservation	2,680 19 1	3,787 17 9	..
Resumption of land	..	..	..
Compensation proclamation of rivers	6,083 18 9	6,083 18 9	..
Aid towards the treatment of ores	778 1 0	778 1 0	..
	69,836 18 6	65,922 17 5	51,232 4 2
1901–2.			
Roads on goldfields	80,602 9 4	44,697 10 0	35,904 19 4
Roads and tracks undertaken by County Councils, subsidised by Mines Department	34,216 16 8	2,847 17 3	1,909 0 11
Works undertaken by prospecting associations and companies, subsidised by Mines Department	2,578 10 8	1,509 10 9	1,826 6 2
Water-races	5,860 3 5	6,665 15 1	1,760 16 1
Drainage-channels	1,005 1 8	889 4 6	1,390 3 7
Schools of Mines	2,087 13 8	2,087 13 8	..
Prospecting deep levels	..	..	..
Water-conservation	2,114 12 5	942 13 10	1,171 19 7
Resumption of land	..	..	..
Compensation proclamation of rivers	5,318 2 9	5,318 2 9	..
Aid towards the treatment of ores	77 17 0	27 17 0	50 0 0
	133,861 7 7	64,986 4 10	44,013 5 10
1902–3.			
Roads on goldfields	62,389 0 5	50,230 12 3	48,063 7 6
Roads and tracks undertaken by County Councils, subsidised by Mines Department	2,285 0 0	1,409 0 8	1,512 1 11
Works undertaken by prospecting associations and companies, subsidised by Mines Department	1,595 17 0	1,131 0 4	1,821 17 7
Water-races	6,122 11 11	5,316 10 3	..
Drainage-channels	2,896 14 2	1,567 13 8	2,454 14 9
Schools of Mines	2,533 14 2	2,533 14 2	..
Prospecting deep levels	..	..	..
Water-conservation	2,535 0 10	2,982 0 5	725 0 0
Resumption of land	..	..	..
Proclamation of rivers	13,215 10 8	13,215 10 8	..
Aid towards the treatment of ores	50 12 5	50 12 5	..
	93,624 1 7	78,436 14 10	54,577 1 9

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.
1903–4.	£ s. d.	£ s. d.	£ s. d.
Roads on goldfields	60,427 18 6	45,116 3 0	23,375 3 0
Roads and tracks undertaken by County Councils, subsidised by Mines Department	600 0 0	428 10 1	..
Works undertaken by prospecting associations and companies, subsidised by Mines Department	1,994 8 0	1,088 17 3	1,380 9 7
Water-races	883 12 3	683 12 3	200 0 0
Drainage-channels	2,135 17 0	1,684 15 9	458 5 0
Schools of Mines	2,366 9 9	2,366 9 9	..
Prospecting deep levels	6,099 18 1	6,099 18 1	..
Water-conservation	1,819 4 5	1,544 4 5	..
Proclamation of rivers	5,176 17 7	5,176 17 7	..
Aid towards the treatment of ores	49 10 0	49 10 0	..
	81,353 5 7	64,238 18 2	25,413 17 7
SUMMARY.			
Roads on goldfields	537,324 6 5	513,949 3 5	23,375 3 0
Subsidised roads and tracks	174,399 1 5	103,132 2 2	..
Subsidised roads and tracks other than on goldfields	6,146 9 10	4,759 6 2	..
Prospecting	84,077 0 10	32,367 14 2	1,380 9 7
Water-races	101,397 10 11	97,811 18 7	200 0 0
Wharves	435 15 9	285 15 9	..
Schools of Mines	34,511 7 10	34,511 7 10	..
Drainage-channels	44,949 7 10	29,681 18 11	458 5 0
Diamond drills	5,170 11 4	3,428 11 4	..
Treatment of ores	3,213 10 6	2,563 10 6	..
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	57,099 18 1	31,599 18 1	..
Resumption of land	3,112 7 0	3,112 7 0	..
Water-conservation	25,583 10 3	24,583 10 3	..
Construction of telephone-lines	60 0 0	50 0 0	..
Proclamation of rivers	36,478 4 3	36,478 4 3	..
	1,115,584 10 4	919,940 16 6	25,413 17 7

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, 1904.

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.	£ s. d.	£ s. d.	£ s. d.
Brunner-Blackball	731 12 0	608 13 3	122 18 9
Prospecting-track, Okarito	100 0 0	..	100 0 0
Cabbage Bay-Port Charles and Cape Colville	2,622 0 0	2,499 0 0	123 0 0
Tairua-Whenuakite	950 0 0	850 0 0	100 0 0
Coromandel-Cabbage Bay	984 0 0	884 0 0	100 0 0
Tiki-Kaimarama	1,085 10 0	955 10 0	130 0 0
Tiki-Manaia	1,633 13 0	1,508 11 3	125 1 9
Manaia-Waikawau	5,145 0 0	5,080 8 0	64 12 0
Mercury Bay-Whenuakite and Boat Harbour	700 0 0	600 0 0	100 0 0
Kuaotunu-Mercury Bay	1,522 11 6	1,422 11 6	100 0 0
Coromandel-Whangapoua	1,703 0 0	1,603 0 0	100 0 0
Kikowhakarere-Cabbage Bay	1,200 0 0	1,066 0 0	134 0 0
Whitianga-Kaimarama	1,099 0 0	946 10 9	152 9 3
Opitonui Road	988 0 0	838 0 0	150 0 0
Ohuka Creek Bridge	510 0 0	430 0 0	80 0 0
Four-in-hand Road	479 18 0	429 18 0	50 0 0
Opitonui Bridge	400 0 0	200 0 0	200 0 0
Kapowai Track	689 0 0	589 0 0	100 0 0
Mahaki Goldfields Track	300 0 0	250 0 0	50 0 0
Driving Creek School Bridge, Tokatea Road	400 0 0	236 18 6	163 1 6
Waitaia Mine to Battery	400 0 0	300 0 0	100 0 0
Kennedy Bay-Matamatabarakeke	100 0 0	..	100 0 0
Karaka Creek (encroachment)	100 0 0	50 0 0	50 0 0
Ward's Road-Cape Colville	200 0 0	150 0 0	50 0 0
Dredging Waiwawa River	300 0 0	200 0 0	100 0 0
East side of Range Track	200 0 0	100 0 0	100 0 0
Scotty's Mine to Battery	150 0 0	..	150 0 0
Kaimarama Bridge	350 0 0	..	350 0 0
Waikawau-McLaughlin's	100 0 0	..	100 0 0
Manaia Goldfield Road	100 0 0	..	100 0 0
Colville II., Moehau II., and Harataunga I. Blocks	100 0 0	..	100 0 0
Harataunga I. and II. Blocks	100 0 0	..	100 0 0
Thames-Waikawau	2,681 15 3	2,554 15 3	127 0 0
Thames-Hikutaia	2,479 15 5	2,292 15 5	187 0 0
Upper Tararu Road	1,756 9 11	1,591 15 2	164 14 9
Tapu Creek and Extension	1,756 1 11	1,606 1 11	150 0 0
Turua-Netherton	1,625 5 0	1,538 5 0	87 0 0
Hikutaia-Whangamata "Wires" Track	2,261 7 6	2,161 7 6	100 0 0
Omahu-Whangamata	1,945 0 0	1,845 0 0	100 0 0
Puriri-Neavesville	799 10 0	649 10 0	150 0 0
Neavesville-Upper Landing	620 0 0	444 0 0	176 0 0
Upper Landing-Tairua	450 0 0	350 0 0	100 0 0
Thames—Whangamata	687 0 0	585 5 2	101 14 10
Karaka Creek Road	150 0 0	100 0 0	50 0 0
Waiotahi Road	393 16 5	343 16 5	50 0 0
Waiomo Creek Road	757 0 0	700 0 0	57 0 0
Tapu and Mercury Bay Track	278 0 0	178 0 0	100 0 0
Tapu-Gumtown	500 0 0	400 0 0	100 0 0
Crosbie Settlement Road	200 0 0	100 0 0	100 0 0
Kaueranga Bridge	499 6 0	299 6 0	200 0 0
Tairua-Broken Hills	300 0 0	..	300 0 0
Goldfields Roads (metalling)	100 0 0	..	100 0 0
Waiotahi Aqueduct (repairs)	100 0 0	..	100 0 0
Hikutaia-Waihi	3,775 0 0	3,423 17 6	351 2 6
Waitekauri-Golden Cross	2,664 0 0	2,222 15 0	441 5 0
Waihi-Whangamata	1,107 0 0	861 0 0	246 0 0
Paeroa-Te Aroha	946 3 2	902 11 2	43 12 0
Netherton Roads	1,068 0 0	890 10 6	177 9 6
Waihi-County Boundary	1,497 10 0	1,322 17 9	174 12 0
Komata Creek Road	640 0 0	405 13 0	234 7 0
Hikutaia-Maratoto	544 2 6	394 2 6	150 0 0
Mackaytown-Rahu	200 0 0	162 12 1	37 7 11
Paeroa-Te Aroha Bridge	500 0 0	..	500 0 0
Onamalutu-Wakamarina	808 0 0	688 0 0	120 0 0
Wakamarina Road and Bridges	50 0 0	..	50 0 0
Ferntown-Pakawau	807 0 0	600 0 0	207 0 0
Bainham-Upper Aorere	200 0 0	149 19 10	50 0 2
Pakawau-Tamatea	373 18 0	247 18 0	126 0 0
Aorere Bridge (repairs)	250 0 0	72 5 3	177 14 9
West Wanganui Inlet Bridge	379 0 0	116 14 0	262 6 0
Long Plain Road Extension	150 0 0	..	150 0 0
Takaka Hill Road	150 0 0	..	150 0 0
Motueka River Protective Works	280 5 8	..	280 5 8
Wangapeka-Baton	900 0 0	750 0 0	150 0 0
Riwaka-Kaiteriteri Beach	204 0 0	153 19 6	50 0 6
Thorpe-Neudorf	200 0 0	100 0 0	100 0 0
Chandler's-Wangapeka Junction	200 0 0	..	200 0 0
Millerton Road	1,350 0 0	1,150 0 0	200 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.
North Beach–Karamea	150 0 0	100 0 0	50 0 0
Westport–Mokihinui	1,900 0 0	1,850 0 0	50 0 0
Lyell–Victoria Range	150 0 0	..	150 0 0
Promised Land–Ohinemuri Creek	300 0 0	200 0 0	100 0 0
Land of Promise Road	700 0 0	550 0 0	150 0 0
Karamea Mud-flat	850 0 0	600 0 0	250 0 0
Brighton–Grey County Boundary	750 0 0	650 0 0	100 0 0
Glass-eye Creek Track	200 0 0	100 0 0	100 0 0
Lyell–Cedar Creek	550 0 0	450 0 0	100 0 0
Britannia Mine Road	600 0 0	300 0 0	300 0 0
Granity Creek–Ngakawau	250 0 0	100 0 0	150 0 0
Seddonville–Mokihinui Mine	450 0 0	350 0 0	100 0 0
Coal Creek extension	100 0 0	..	100 0 0
Burnett's Face–Coalbrookdale	300 0 0	150 0 0	150 0 0
Welshman's Flat Bridge	300 0 0	..	300 0 0
Darkie's Hill Road and Bridge	100 0 0	..	100 0 0
Waimangaroa–Granity	300 0 0	150 0 0	150 0 0
Fairdown–Sergeant's Hill *viâ* Railway	250 0 0	200 0 0	50 0 0
Seatonville–Mokihinui Mine	300 0 0	200 0 0	100 0 0
Nile Creek Bridge	100 0 0	50 0 0	50 0 0
Seddonville Township to Colliery	150 0 0	..	150 0 0
Millerton Township Streets	150 0 0	..	150 0 0
Mear's Road	50 0 0	..	50 0 0
Denniston–Burnett's Face	150 0 0	..	150 0 0
Mokihinui–Inangahua Junction	150 0 0	..	150 0 0
Reefton–Maruia	3,574 0 0	3,524 0 0	50 0 0
Matakitaki–Glenroy–Maruia	1,307 15 6	847 15 6	460 0 0
Mangles Valley Road	1,143 0 0	1,091 9 10	51 10 2
Blackwater Bridge	400 0 0	..	400 0 0
Just-in-Time Shaft–Victoria Range	200 0 0	..	200 0 0
Waitahu River Bridge	100 0 0	..	100 0 0
Road to Matakitaki River Bridge	200 0 0	..	200 0 0
Maruia Road *viâ* Caslani's	438 0 0	313 0 0	125 0 0
Kirwan's Reward to Battery-site	100 0 0	..	100 0 0
Inglewood–Painkiller	200 0 0	177 4 9	22 15 3
Boatman's Road	100 0 0	..	100 0 0
Blackwater Road (widening)	150 0 0	75 0 0	75 0 0
Blackadders Coal-mine Road	100 0 0	..	100 0 0
Blackball–Healey's Gully	1,250 0 0	1,200 0 0	50 0 0
Maori Creek–Maori Gully (widening)	250 0 0	150 0 0	100 0 0
Grey–Dunganville Road Bridges	400 0 0	250 0 0	150 0 0
Upper Moonlight Road	150 0 0	130 0 0	20 0 0
Hohonu River Bridge to Cape Terrace	200 0 0	175 0 0	25 0 0
Teremakau–Paroa	100 0 0	80 5 0	19 15 0
Larrikins–Loopline (widening)	200 0 0	..	200 0 0
Big Dam Track (repairs)	75 0 0	34 6 0	40 14 0
Duffer's Creek Bridge	250 0 0	..	250 0 0
Lawrence–Waipori	2,225 0 0	2,175 0 0	50 0 0
Waipori–Waitahuna	550 0 0	453 19 0	96 1 0
Waipori Bush Road	750 0 0	696 19 8	53 0 4
FitzGerald's Bridge	340 0 0	..	340 0 0
Waipori–Outram	200 0 0	150 0 0	50 0 0
Gentle Annie–Clyde	625 0 0	544 12 6	80 7 6
Lawrence–Clyde	4,725 0 0	4,670 17 6	54 2 6
Ophir Bridge	1,000 0 0	..	1,000 0 0
Roaring Meg Bridge	150 0 0	..	150 0 0
Nevis River Bridge	150 0 0	..	150 0 0
Arrowtown–Macetown	1,700 0 0	1,546 15 6	153 4 6
Shotover River Track	500 0 0	481 8 0	18 12 0
Garston–Nevis (Lake County)	400 0 0	328 7 6	71 12 6
Orepuki–Shale-works	100 0 0	55 8 3	44 11 9
Top Valley Road	729 9 8	624 9 8	105 0 0
Motueka Bridge	1,000 0 0	..	1,000 0 0
Mokihinui–Little Wanganui	5,258 7 4	4,758 7 4	500 0 0
Inangahua Bridge	1,512 9 9	1,323 13 4	188 16 5
Roads State Coal-mine Township	250 0 0	63 1 6	186 18 6
Kanieri Bridge	950 0 0	219 12 7	730 7 5
Orepuki–Preservation Inlet	3,888 9 4	3,388 9 4	500 0 0
Collingwood Bridge and approaches	7,538 9 6	7,500 10 2	37 19 4
Westport–Waimangaroa	200 0 0	..	200 0 0
Waimangaroa–Fairdown	300 0 0	139 7 3	160 12 9
Taylorville Bridge	2,053 15 5	1,564 9 5	489 6 0
	122,261 7 9	98,886 4 9	23,375 3 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.
SCHOOLS OF MINES.	£ s. d.	£ s. d.	£ s. d.
Schools of Mines	23,958 1 8	23,958 1 8	..
School of Mines (Otago University)	10,553 6 2	10,552 6 2	..
	34,511 7 10	34,511 7 10	..
PROSPECTING SUBSIDIES.			
Coromandel County	944 0 0	884 10 0	59 10 0
Coromandel County (J. and M. Fitzgerald)	53 1 0	50 2 0	2 19 0
Coromandel County (Horne and McIsaac)	30 0 0	6 0 0	9 0 0
Coromandel County (Dyer and O'Keefe)	30 0 0	8 5 0	6 15 0
Coromandel County (A. Kelso)	60 0 0	22 19 0	7 1 0
Coromandel County (New Hero Claim)	60 0 0	19 10 0	10 10 0
Coromandel County (E. McMillan)	30 0 0	..	15 0 0
Coromandel County (Hosie and Marshall)	30 0 0	..	15 0 0
Coromandel County (J. Sweeney)	15 0 0	..	7 10 0
Coromandel County (Mayne and Callaway)	30 0 0	..	15 0 0
Victoria Gold-mining-Company (Thames foreshore)	1,184 0 0	417 10 8	766 9 4
Ohinemuri County (Cornes and Gordon)	32 10 0	..	32 10 0
Ohinemuri County (W. Tregoweth)	180 0 0	..	90 0 0
Ohinemuri County (Hugh Butler)	26 0 0	..	13 0 0
Blackwater Miners' Association (O'Flaherty and Lawrence)	160 0 0	17 7 6	62 12 6
Blackwater Miners' Association (J. Duncan)	160 0 0	..	80 0 0
Buller County (McGonagle and Chapman)	26 0 0	..	13 0 0
Buller County (Gardner and Bettzeman)	90 0 0	22 10 0	22 10 0
Inangahua County (Tangey and Hayden)	26 0 0	..	13 0 0
Inangahua County (Moncrief and Edwards)	26 0 0	..	13 0 0
Westland County (Holst and party)	28 15 0	14 16 9	13 18 3
Westland County (G. L. Tacon)	24 0 0	..	12 0 0
Westland County (R. A. Harcourt)	200 0 0	15 9 0	84 11 0
Gill and McDonald, shaft, Rock and Pillar	25 0 0	9 6 6	15 13 6
	3,470 6 0	1,488 6 5	1,380 9 7
WATER-RACES.			
Waimea–Kumara Water-race	51,662 5 7	51,662 5 7	..
Mount Ida Water-race	11,486 19 4	11,286 19 4	200 0 0
	63,149 4 11	62,949 4 11	200 0 0
DRAINAGE AND TAILINGS CHANNELS.			
Jones Creek Storm-channel	100 0 0	50 0 0	50 0 0
Waimea Main Tail-race	1,905 1 8	1,794 6 8	110 15 0
St. Bathan's Channel	3,000 0 0	1,812 10 0	187 10 0
Kelly's Terrace Tunnel	2,667 10 0	2,047 0 6	100 0 0
Deep Level Drainage Tunnel (repairs)	10 0 0	..	10 0 0
	7,682 11 8	5,703 17 2	458 5 0
WATER-CONSERVATION ON GOLDFIELDS.			
Engineer's salary and expenses	2,605 8 9	2,605 8 9	..
	2,605 8 9	2,605 8 9	..

Summary of Works.

Works under construction wholly by Mines Department	122,261 7 9	98,886 4 9	23,375 3 0
Schools of Mines	34,511 7 10	34,511 7 10	..
Prospecting subsidies	3,470 6 0	1,488 6 5	1,380 9 7
Water-races	63,149 4 11	62,949 4 11	200 0 0
Drainage-channels	7,682 11 8	5,703 17 2	458 5 0
Compensation, proclamation of rivers	36,478 4 3	36,478 4 3	..
Water-conservation on goldfields	2,605 8 9	2,605 8 9	..
Total	270,158 11 2	242,622 14 1	25,413 17 7

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, 1904.

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
Cabbage Bay–Ward's Track	200	0	0	100	0	0
Repairs, bridges, Kuaotunu Main Road	200	0	0	100	0	0
Coromandel–Mercury Bay	200	0	0	35	0	0
	19,286	3	9	11,455	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 Maungawherawhera 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
Townsend's Road	30 0 0	26 12 0
Gumtown–Kapowai	300 0 0	196 9 0
Footbridge, Pepe Creek	300 0 0	51 18 6
Road from Taniwha to fourth branch Tairua River	200 0 0	100 0 0
	14,054 15 11	7,934 6 11
Thames Borough.		
Repairing roads	975 19 2	600 0 0
Widening and straightening Karaka Creek	300 0 0	150 0 0
Metalling goldfields roads	800 0 0	672 12 6
Removing *débris*, Karaka Creek	300 0 0	150 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
Repairs, Waiotahi Creek Bridge	50 0 0	25 0 0
Removing *débris*, Karaka and Waiotahi Creeks	350 0 0	275 0 0
Water-tables, Kirkwood Street	20 0 0	11 12 6
Clearing *débris*, Waiotahi Creek	225 0 0	112 10 0
	3,836 19 2	2,471 15 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 Riley'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
Road running south on left bank Waihou River	400 0 0	384 19 0
Kaimanawa Road	200 0 0	126 2 6
Mangaiti and Waitoa Road and Punt	200 0 0	119 7 10
Earl of Glasgow Claim Track	400 0 0	300 0 0
Low Level Tunnel, Jubilee Mine (E. Kersey Cooper)	1,500 0 0	750 0 0
	10,257 17 9	5,687 8 5
Waitoa Road Board		
Drain, Te Aroha West	200 0 0	130 0 0
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	500 0 0	285 0 0
Waihou Bridge	580 0 0	290 0 0
Repairs, Te Aroha Tramway	150 0 0	75 0 0
	22,498 2 3	14,691 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
Te Aroha Track	39 19 6	19 18 9
	507 19 6	253 18 9
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
Repairs, Motueka Bridge	939 8 8	469 14 4
	1,459 8 8	729 14 4

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.
Collingwood County.						
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
Kaituna–Ferntown	250	0	0	150	0	0
Takaka roads	600	0	0	400	10	0
Collingwood–Kaituna	400	0	0	300	0	0
	3,681	1	8	2,144	19	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
Buller River Footbridge below Lyell	250	0	0	170	0	0
Virgin Flat Road	200	0	0	100	0	0
Orowaiti Bridge	350	0	0	325	0	0
Long Tunnel Road, Addison's	200	0	0	100	0	0
Stony Creek–Waimangaroa	300	0	0	200	0	0
	11,638	1	4	6,600	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.		
	£	s.	d.	£	s.	d.
Grey County.						
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	8
Road, Limestone to Maori Creek	800	0	0	533	6	0
Red Jack's to Nelson Creek	601	17	6	401	5	4
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
New River Bridge wing	100	0	0	86	0	0
River View Road	200	0	0	140	0	0
Mosquito Road	500	0	0	252	10	0
Road to Totara Flat Dredge	50	0	0	25	0	0
Maori Gully Bridge	150	0	0	75	0	0
Culverts, Nelson–Grey–Hokitika Road	300	0	0	150	0	0
Paparoa track–Garden Gully	200	0	0	100	0	0
Repairs, No Town Creek Bridge	200	0	0	110	0	0
Protective works, Big Grey Bridge	200	0	0	79	8	1
	21,019	4	0	12,773	11	3
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	359	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
Improving road, Seven-mile–Taipo	150	0	0	73	3	6
Widening Shallow Rush Track	300	0	0	54	17	3
	11,008	15	6	6,724	6	10
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
Road up Dart River	150	0	0	75	0	0
Cutting on Homeward-bound Hill	100	0	0	75	0	0
Skipper's Bridge	4,244	0	0	3,244	0	0
	7,145	6	1	4,926	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
Metalling, Lawrence–Waipori	550	0	0	341	3	6
Repairs, FitzGerald's Bridge	1,500	0	0	410	0	0
	16,195	7	8	9,063	7	2
Cromwell Borough.						
Removal of sand	500	0	0	250	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	1,841	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
Maitland Village–Mining Reserve	100	0	0	50	0	0
	2,455	0	0	1,476	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	0
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 6
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 0 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
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
Westland County (Patrick and Moynihan)	86 0 0	45 0 0
Westland County (Ryan and Son)	120 0 0	60 0 0
Westland County, prospecting, Kanieri (£1 for £1)	1,228 15 0	614 7 6
Westland County (Dwyer and party, Blue Spur)	800 0 0	758 6 0
Miners' Association, Waiho (Batson and Snow)	9 0 0	9 0 0
Miners' Association, Nelson Creek (Coll and Moran)	160 0 0	160 0 0
Miners' Association, Nelson Creek (Hurley and party)	164 0 0	82 0 0
Miners' Association, Blackball (Keenan and Falconer)	5 17 0	5 17 0
Miners' Association, Blackball (McKenzie and O'Brien)	43 10 0	43 10 0
Miners' Association, Ross (McLeod and Dunlop)	63 14 6	40 8 6
Miners' Association, Ross (Smith and Regan)	164 2 0	164 2 0
Miners' Association, Greenstone (Candy, Roberts, and Evans)	100 0 0	60 8 6
Buller County (Jeffreys and Walker)	8 0 0	8 0 0
Buller County (Christmas and party)	4 15 0	4 15 0
Buller County (Burkitt and party)	13 0 0	13 0 0
Buller County (Stewart and party)	12 0 0	12 0 0
Buller County (Robertson and Sangwell)	26 0 0	26 0 0
Buller County (Ramsey and O'Connor)	4 15 0	4 15 0
Buller County (Clough and McGonagle)	8 0 0	8 0 0
Buller County (Negri and others)	12 0 0	12 0 0
Buller County (Quinn and party)	34 0 0	18 0 0
Buller County (Murray and Forsyth)	9 0 0	9 0 0
Buller County (Salter and party)	6 10 0	6 10 0
Inangahua County (Z. E. Curnow)	6 10 0	4 15 0
Culley and Hislop, prospecting, Kawakawa	125 0 0	125 0 0
Prospecting Association (Riverton)	25 0 0	25 0 0
Tuapeka County (Gabriel's Gully)	400 0 0	223 10 10
Nobel, Stenhouse, and Crawford's tunnel, New Chum Creek	240 0 0	240 0 0
Holmes and party's tunnel, Tucker's Flat	400 0 0	208 8 0
Deep Levels, Kumara	3,269 0 0	1,197 10 4
Miners' Association, Ross (Moye and Son)	60 0 0	14 19 6
Miners' Association, Ross (Paterson and McGowan)	26 0 0	13 0 0
Miners' Association, Waiho (Nelly and Murray)	26 0 0	12 0 0
Miners' Association, Red Jacks (Drummond and party)	50 0 0	24 0 0
Westland County (Roseveri and party)	160 0 0	80 0 0
Prospecting Mokihinui Mine (Lomas and party)	500 0 0	250 0 0
Towai-Hukerenui Coal Syndicate	200 0 0	35 2 0
Ohinemuri County (P. Prudence)	6 0 0	1 4 0
Westland County (Irwin and party)	100 0 0	35 0 0
Buller County (Brand and party)	80 0 0	74 14 3
Westland County, prospecting, Rimu (£1 for £1)	4,692 17 0	2,346 8 0
Miners' Association, Havelock (Kearns and McCusker)	100 0 0	76 0 0
Westland County (Patrick and Moynihan)	300 0 0	195 5 0
Greymouth Harbour Board (boring for coal)	500 0 0	250 0 6
Westland County (Beroz and Mills)	200 0 0	155 0 0
Ohinemuri County (Scanlon and Eyre)	32 0 0	16 0 0
Ross Borough Council (Smith and party)	70 0 0	35 0 0
Johnston, Bryan, and party's tunnel	305 0 0	305 0 0
Blackwater Miners' Association (Banman Bros.)	81 0 0	81 0 0
Inangahua County (P. Tangney)	2 5 0	2 5 0
Westland County (G. McArthur)	6 10 0	3 10 0
Westland County (Rebay and Rebustitti)	80 0 0	40 0 0
Westland County (Ryan and Son)	80 0 0	38 15 0
Westland County (W. Roblofski and party)	150 0 0	75 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.
Westland County (Singer and party)	19 10 0	19 20 0
Westland County (Warren and party)	60 0 0	48 6 0
Westland County (Holst and party)	80 0 0	16 16 0
Westland County (Smith and party)	18 0 0	12 0 0
Golden Basin Prospecting Association	435 0 0	146 6 0
Miners' Association, Charleston	110 0 0	58 2 3
Miners' Association, Nelson Creek (Kelly and party)	110 0 0	29 15 9
Ohinemuri County (Scanlon and Eyre)	46 0 0	23 0 0
Buller County (Glass-eye Creek)	26 0 0	13 0 0
Coromandel County, Tunnel Whakaroa Creek	60 0 0	30 0 0
Miners' Association, Kanieri (McQuilkin and party)	20 0 0	11 5 0
Westland County (Harvey and McDonald)	12 0 0	12 0 0
Contingencies	217 5 8	217 5 8
	80,606 14 10	30,879 7 9
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
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
Bell Hill Sluicing Company	1,000 0 0	500 0 0
Finlay and McLiver's Water-race, at Measletown	400 0 0	34 5 4
Mountain Hut water-race	4,879 12 0	4,879 12 0
	38,248 6 0	34,862 13 8
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	4,547 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	1,092 9 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. 4	1,200 0 0	1,151 10 8
Donnelly's Creek Tail-race	1,657 0 0	444 4 5
Muddy Creek Channel	2,000 0 0	1,000 0 0
Drain, Te Aroha West	200 0 0	61 0 0
Kumara Sludge-channel No. 5 and extension	5,654 15 11	5,654 15 11
Waimumu Main Tail-race	3,502 13 5	1,502 13 5
Charlton Tail-race	1,362 17 7	362 17 7
Kumara Sludge-chanel No. 3	92 0 0	92 0 0
Compensation, Owen Roberts	75 0 0	75 0 0
	37,266 16 2	23,978 1 9
Aid towards the Treatment of Ores.		
Testing-plant, School of Mines, Thames	1,200 0 0	600 0 0
Testing minerals, Dunedin Exhibition	192 8 9	142 8 9
Testing-battery, Mercury Bay	915 1 4	915 1 4
Public crushing-plant (Coromandel School of Mines)	906 0 5	906 0 5
	3,213 10 6	2,563 10 6
Aid towards Construction of Telephone-lines.		
Bannockburn to Nevis	60 0 0	50 0 0

LIST of WORKS on GOLDFIELDS, &c.—*continued.*

Locality and Nature of Works.	Total Cost.			Amount of Contribution paid by Mines Department.		
WATER-CONSERVATION ON GOLDFIELDS.	£	s.	d.	£	s.	d.
Reports on Drainage, Ross Flat	284	10	8	284	10	8
Coromandel Harbour and Kuaotunu Sludge-channels	80	12	6	80	12	6
Eweburn Reservoir	16,459	15	10	16,459	15	10
Mackeytown Water-supply	351	0	0	351	0	0
Waitekauri Water-supply	445	2	5	445	2	5
Karangahake Water-supply	607	6	5	607	6	5
Clyde Water-supply	1,121	13	2	1,121	13	2
Home Gully Dam	1,028	0	6	1,028	0	6
Thames Drainage Board (contribution)	1,000	0	0	1,000	0	0
Alexandra Water-supply	1,600	0	0	600	0	0
	22,978	1	6	21,978	1	6
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
Oparara through gorge to gold-workings				150	0	0
Okira Bridge, at Dirty Mary's Creek				100	0	0
Lagoon Bridge				100	0	0
Widening Cape Terrace Road				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

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.
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
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

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.
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
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
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
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

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.
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
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, No Town 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 6
Roads, Tauranga County	1,226 17 5	1,226 17 0
Re-metalling Wakamarina Road	500 0 0	500 0 5
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 0
Track to Adamstown	375 4 0	375 4 6
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 0
Roxburgh–Clyde	500 0 0	500 0 9
Orepuki–Block I., Longwood	500 0 0	500 0 0
Tableland horse-track	199 9 3	199 9 0
Landing Creek Bridge	289 16 6	289 16 3
Walker's Creek Bridge	214 12 2	214 12 6
Greenstone–Teremakau	240 0 3	240 0 2
Bell Hill Road	199 9 4	199 9 3
Bridge over Kanieri River	94 5 0	94 5 4
Main South Road to Mikonui Beach	84 15 0	84 15 0
Deviation, Larrikin's Road	1,375 4 2	1,375 4 0
Pine-tree Road	45 10 7	45 10 2
Wire Bridge, German Gully Track	89 19 6	89 19 7
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 Schoolhouse, 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
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

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.
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
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	920	0	0	920	0	0
Mokihinui to Reefs, widening	500	0	0	500	0	0
Mokihinui to Wanganui, improving	600	0	0	600	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
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
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
Blue Spur Creek Bridge	29	8	0	29	8	0
Young Hill Creek Road	150	0	0	150	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
Wangapeka-Wanganui	2,324	17	2	2,324	17	2
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
Whangamata Harbour to Wentworth	100	0	0	100	0	0
Waiorongomai-Gordon	150	0	0	150	0	0
Easing grade Kahika Hill	75	0	0	75	0	0
Bartlett's Creek-Cat Point	200	0	0	200	0	0
Bridges, Dead Horse and Walker's Creeks	25	0	0	25	0	0
Black Creek Bridge	75	0	0	75	0	0
Wharton's Dam to Deep Creek	25	0	0	25	0	0
Piano Flat Company's Track	50	0	0	50	0	0
Waikaia-Whitecomb (repairs)	50	0	0	50	0	0
Mangles Bridge	4,323	4	8	4,323	4	8
Karangarua Bridge	448	13	6	448	13	6
Repairs Donnelly's Creek Bridge	440	1	3	440	1	3
Waiau Bridge to Old Mill-site	150	0	0	150	0	0
Donnelly's Bridge	136	10	0	136	10	0
Sullivan's Creek Bridge	164	0	0	164	0	0
Rings Road Bridge	325	0	0	325	0	0
Railway-stations Roads	500	0	0	500	0	0
Matatoke Outfall-drain	100	0	0	100	0	0
Komata Reefs-Paeroa	500	0	0	500	0	0
Grace Darling Road	392	0	0	392	0	0
Komata Creek Road	150	0	0	150	0	0
Waitekauri Creek Bridge	160	0	0	160	0	0
Papamoa-Te Puke	275	0	0	275	0	0
Tauranga-Te Puke	400	0	0	400	0	0
Slate River Road	100	0	0	100	0	0
Motupipi Bridge	100	0	0	100	0	0
Tracks, Wakamarina and Mahakipawa	46	16	6	46	16	6
Promised Land-Ohinemuri Creek	400	0	0	400	0	0
Fairdown to Beach	100	0	0	100	0	0
Paparoa River Track	100	0	0	100	0	0
Capleston-Larry's	415	0	0	415	0	0
Blackball-Paparoa	1,686	10	0	1,686	10	0
Coal Creek Bridge	538	0	0	538	0	0
Totara Flat Road	100	0	0	100	0	0
Dowling Creek Bridge	175	0	0	175	0	0
Granite Creek Bridge	100	0	0	100	0	0
Blackball Road (improvements)	100	0	0	100	0	0
Sunny Bight Track (widening)	200	0	0	200	0	0
Callery Track and Wire Bridge	400	0	0	400	0	0
Mikonui River approaches	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.
McKay's Creek Bridge	270	12	0	270	12	0
Haast–Blue River Road	100	0	0	100	0	0
Arawata Track	100	0	0	100	0	0
Turnbull and Okuru Rivers Track	100	0	0	100	0	0
Waitahuna–Bruce County boundary	300	0	0	300	0	0
Clyde–Ophir	200	0	0	200	0	0
Nokomai Road	250	0	0	250	0	0
Skipper's–Gallant Tip	100	0	0	100	0	0
Beale's Hill Road deviation	100	0	0	100	0	0
Gore–Waikaka	400	0	0	400	0	0
Riversdale–Waikaia	200	0	0	200	0	0
Charlton Road	200	0	0	200	0	0
Orepuki–Shale-works	200	0	0	200	0	0
Havelock–Mahakipawa	191	5	1	191	5	1
Dee Creek Bridge	538	3	10	538	3	10
Cook's River Flat (widening)	396	13	6	396	13	6
Galway–Bluff Track	147	15	10	147	15	10
Kokotahi Road	451	2	5	451	2	5
Donoghue's deviation	229	18	6	229	18	6
Mason's Bay Track	150	9	6	150	9	6
Granity Creek Bridge	431	12	0	431	12	0
Mount Hercules deviation (Great South Road)	1,119	4	6	1,119	4	6
Bridles Point–Deedwater	250	0	0	250	0	0
Waitaia Mine to battery	100	0	0	100	0	0
Gumtown Landing to post-office	50	0	0	50	0	0
Repairs, track, Thames Road to McLaughlin's	50	0	0	50	0	0
Maratoto Road	199	13	10	199	13	10
Thames River–Whangamata	200	0	0	200	0	0
Cullensville–Waikakaho	55	0	0	55	0	0
Road to Golden Bar Mine	83	3	6	83	3	6
Tuamarina–Kaituna	184	0	0	184	0	0
Neudorf–Ngatimoti	100	0	0	100	0	0
Graham River Bridge	150	0	0	150	0	0
Takaka Bridge protective works	150	0	0	150	0	0
Takaka Hill Road	150	0	0	150	0	0
Cobden–Barrytown (repairs)	1,572	0	0	1,572	0	0
Brown's Terrace–Kotuku	100	0	0	100	0	0
Blackball footbridge approaches	250	0	0	250	0	0
Twelve-mile Bluff–Fourteen-mile Bluff	100	0	0	100	0	0
Cobden–Point Elizabeth	100	0	0	100	0	0
Nelson Creek–Bell Hill	250	0	0	250	0	0
Big River–Slatey Creek	100	0	0	100	0	0
Big River–St. George	249	14	0	249	14	0
Kanieri River Bridge	30	15	0	30	15	0
Arrow–Matatapu	100	0	0	100	0	0
Bridles Point–Deepwater	100	0	0	100	0	0
Blind Bay–Whangaparapara	844	1	5	844	1	5
Karaka Creek Road	100	0	0	100	0	0
Lower Tairua–Broken Hill	150	0	0	150	0	0
Waitekauri–Wharekiraupunga	98	8	6	98	8	6
Mill Road	200	0	0	200	0	0
Waitekauri–Hill Track	100	0	0	100	0	0
Repairs, Kaituna Bridge	81	3	6	81	3	6
Lloyd's Valley Road bridges	150	0	0	150	0	0
Glenrae–Tadmor	100	0	0	100	0	0
Brooklyn Valley Road	100	0	0	100	0	0
Oparara River Road, Karamea	550	0	0	550	0	0
Bradshaw's Lead Road	200	0	0	200	0	0
Fenian Creek Track	250	0	0	250	0	0
Karamea River Protective Works	200	0	0	200	0	0
Coalbrookdale–Cedar Creek	200	0	0	200	0	0
Nile River Bridge, Charleston	360	0	0	360	0	0
Deadman's Creek, Brighton	150	0	0	150	0	0
Caroline Terrace Road	100	0	0	100	0	0
Mulliky Creek–Karamea	100	0	0	100	0	0
Murray Creek–Waitahu	568	16	6	568	16	6
Black's Point Road (widening)	1,051	3	3	1,051	3	3
Blackball Footbridge (Brunner–Moonlight Road)	520	0	0	520	0	0
Barrytown–Paparoa	200	0	0	200	0	0
Eight-mile Creek Bridge	442	16	10	442	16	10
Granville–Grey River	150	0	0	150	0	0
Middle Branch–Styx River	400	0	0	400	0	0
Kumara Beach Road–Teremakau	976	0	0	976	0	0
Ross Cemetery Road	200	0	0	200	0	0
Table Hill–Canada Reefs	100	0	0	100	0	0
Beaumont–Rankleburn	250	0	0	250	0	0
Clyde–Queenstown	1,100	0	0	1,100	0	0
White's Reef–Fraser Basin	100	0	0	100	0	0
Hawea–Lindis Pass	150	0	0	150	0	0
Alexandra Bridge	750	0	0	750	0	0
Dairy Creek–Coal-pits	88	0	0	88	0	0
Waimumu Claims Road	200	0	0	200	0	0
Croydon dredging claims	200	0	0	200	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.
Glenary Bridge	400	0	0	400	0	0
Colac–Round Hill	400	0	0	400	0	0
Ross Creek Bridge	84	18	11	84	18	11
Wangapeka–Kiwi	381	0	0	381	0	0
Larry's Creek Bridge (extension)	627	11	1	627	11	1
Belgrove–Westport–Reefton	9,393	6	11	9,393	6	11
Glenroy Bridge	916	19	8	916	19	8
Warwick–Maruia Bridge	7	15	6	7	15	6
Stafford–Awatuna	2,329	3	11	2,329	3	11
Stewart Island Road to Mines	219	8	2	219	8	2
Roads, Preservation Inlet	442	16	8	442	16	8
Tracks, Cromarty	216	6	3	216	6	1
Roads, Stewart Island	113	15	1	113	15	7
Lake Hochstetter Track	178	19	7	178	19	3
Ahaura–Haupiri	1,247	18	4	1,247	18	4
Ahaura–Orwell Creek	668	9	3	668	9	1
Deadman's Creek Bridge	147	7	4	147	7	1
Saltwater Creek Bridge	105	14	4	105	14	4
Mercury Bay, Hospital Road	50	0	0	50	0	0
Coromandel–Mercury Bay	165	0	0	165	0	0
Omahu–Whangamata Track to Klondike Mine	100	0	0	100	0	0
Rocky Point Road	50	0	0	50	0	0
Waitekauri Hill Track	5	0	0	5	0	0
Golden Cross Road (repairs)	34	14	6	34	14	6
Protective works, Main Road, Karangahake	94	18	8	94	18	8
Karangahake–Rotokohu	307	10	0	307	10	0
Aorere River Bridge (repairs)	100	0	0	100	0	0
Burning coal-seam, Boatman's	69	10	0	69	10	0
Paroa–Teremakau	200	0	0	200	0	0
Doolan's Coal-pit Road	300	0	0	300	0	0
Ahaura Bridge	3,314	14	3	3,314	14	3
Orwell Creek Bridge	185	12	2	185	12	2
Dredging Titri Canal	12	0	0	12	0	0
Whakapara–Puhipuhi	585	0	0	585	0	0
Macaronic Mine Road	200	0	0	200	0	0
Owera Bridge	350	0	0	350	0	0
Driving Creek School Bridge	200	0	0	200	0	0
Matatoki Road	467	10	0	467	10	0
Wharepoa Settlement Road	1,059	1	5	1,059	1	5
Crosbie Settlement Road	100	0	0	100	0	0
Peel's Creek Road	100	0	0	100	0	0
Karangahake Track extension	105	0	0	105	0	0
Waihi–Tauranga	197	3	4	197	3	4
Mangakara Creek Bridge	150	0	0	150	0	0
Karangahake–Mangakara	132	7	10	132	7	10
Anatoki Track	250	0	0	250	0	0
Vants to Bubu	300	0	0	300	0	0
Protecting Bridge, Waitapu	200	0	0	200	0	0
Milnthorpe Road	200	0	0	200	0	0
Pakawau–Puponga	100	0	0	100	0	0
Chandler's–Wangapeka Junction	200	0	0	200	0	0
Chandler's–Rolling River	200	0	0	200	0	0
Tableland Track	40	0	0	40	0	0
Lyell–Eight-mile (widening)	750	0	0	750	0	0
Canaan Road	250	18	8	250	18	8
Addison's Road	100	0	0	100	0	0
Virgin Flat Road	100	0	0	100	0	0
Blackwater Track	200	0	0	200	0	0
Welshman's Terrace Track	200	0	0	200	0	0
Fairdown–Waimangaroa	350	0	0	350	0	0
Coal Creek Extension	200	0	0	200	0	0
Warwick–Maruia Bridge	198	2	10	198	2	10
Fairdown Station–Waimangaroa (widening)	300	0	0	300	0	0
Just-in-Time Track	300	0	0	300	0	0
Road to Matakitaki River Bridge	200	0	0	200	0	0
Glenroy River Road	300	0	0	300	0	0
Waipuna Road	925	0	0	925	0	0
Cape Terrace Road	400	0	0	400	0	0
Hatter's Terrace–Bell Hill	500	0	0	500	0	0
Nelson Creek Bridge, Grey–Marsden Road	100	0	0	100	0	0
Nelson Creek Bridge–Hatter's Terrace	200	0	0	200	0	0
Maori Creek Bridge	100	0	0	100	0	0
Eight-mile Creek Bridge Approaches	130	0	0	130	0	0
Moonlight Road	250	0	0	250	0	0
Kokatahi Road	255	0	0	255	0	0
Doughboy Road	210	2	9	210	2	9
Humphrey's–One Mile	238	8	6	238	8	6
Milltown Track Deviation	342	15	0	342	15	0
Lamplough Track	257	0	0	257	0	0
Blue Spur Road Bridge	50	0	0	50	0	0
Tucker Flat Road	88	15	9	88	15	9
Three-mile Bluff–Okarito	150	0	0	150	0	0
Metalling Awatuna Road	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.
Johnston's Creek Road Extension	450 0 0	450 0 0
Waimumu Road	300 0 0	300 0 0
Stoney Ford Bridge–Nokomai	300 0 0	300 0 0
Waikaia Goldfield Road	150 0 0	150 0 0
Waikaia–Whitecomb	100 0 0	100 0 0
Waikaka Township–Little Waikaka	150 0 0	150 0 0
Parrawa–Nokomai Bridge	250 0 0	250 0 0
Stewart Island Road to Mines	311 7 6	311 7 6
Karamea Bridge (rebuilding)	4,044 6 4	4,044 6 4
Westport–Waimangaroa	1,045 0 1	1,045 0 1
Waipuna Bridge	260 12 10	260 12 10
Boatman's Creek Bridge	3 19 0	3 19 0
Sawyer's Creek Bridge	246 17 8	246 17 8
Potts' Creek Bridge	330 0 9	330 0 9
Opitonui Footbridge	90 0 0	90 0 0
Gumtown Road	824 0 0	824 0 0
Paeroa–Waihi	570 0 0	570 0 0
Komata Drain	100 0 0	100 0 0
Thompson's Track	4,723 19 11	4,723 19 11
Waihi–Katikati	2,199 16 0	2,199 16 0
Caledonian Terrace Track	100 0 0	100 0 0
Boatman's Valley Road Bridge	435 0 0	435 0 0
Repairs Kaituna Bridge	68 16 6	68 16 6
Approaches Moonlight Bridge	35 0 0	35 0 0
Repairs Upper Callary Track	50 0 0	50 0 0
Lower Ford Track, Wataroa	50 0 0	50 0 0
Humphrey's Road	18 16 6	18 16 6
Wataroa Bluff Track	571 16 1	571 16 1
Gillam's Guily Track	799 19 7	799 15 7
Back Creek Road and Bridge	99 18 1	99 18 1
Milltown Road	58 15 6	58 15 6
Tucker Flat Road	11 4 3	11 4 3
Clarendon–Berwick	400 0 0	400 0 0
Repairs Great South Road	100 0 0	100 0 0
Campion's Road	150 0 0	150 0 0
Garvie Burn Road	100 0 0	100 0 0
Mataura River Bridge repairs	50 0 0	50 0 0
Edge's Coal-pit Road	150 0 0	150 0 0
Burke's Creek Bridge	245 3 0	245 3 0
Big Ohika Creek Bridge	886 7 4	886 7 4
Prospecting-tracks, Rimu	75 0 0	75 0 0
Denniston Hill Road	5,213 2 7	5,213 2 7
Tokatea–Kennedy Bay	1,085 0 0	1,085 0 0
Coromandel–Kuaotuni *via* Matarangi	1,921 0 0	1,921 0 0
Whitianga–Gumtown	859 6 6	859 6 6
Wharf Road Extension, Coromandel	1,578 12 6	1,578 12 6
Mahakirau Goldfield Road	400 0 0	400 0 0
Tiki–Te Koumu	400 0 0	400 0 0
Waiwawa River Bridge	500 0 0	500 0 0
McColl's Creek Bridge	100 0 0	100 0 0
Driving Creek–Tokatea	200 0 0	200 0 0
Opitonui–Mercury Bay	200 0 0	200 0 0
Bridge and approaches, Waitaia Mine Road	100 0 0	100 0 0
Swamp Creek Bridge	100 0 0	100 0 0
Whangamata–Wentworth	440 0 0	440 0 0
Hape Creek Road	200 0 0	200 0 0
Moanatairi Road	200 0 0	200 0 0
Upper Tairua Bridge	250 0 0	250 0 0
Kaueranga Suspension-bridge	250 13 4	250 13 4
Maratoto Road	100 0 0	100 0 0
Paeroa–Waitoa	2,135 13 4	2,135 13 4
Komata Reefs–Waitekauri	405 0 0	405 0 0
Hikutaia–Waitekauri	1,095 0 0	1,095 0 0
Grace Darling Road	47 8 9	47 8 9
Tui Mine Track	599 14 0	599 14 0
Karangahake Mountain-track	136 0 0	136 0 0
Dividing Range Track	225 0 0	225 0 0
Karangahake Hill Track	210 0 0	210 0 0
Waitawheta Road deviation	408 0 0	408 0 0
Waitekauri Hill Track	100 0 0	100 0 0
Waitekauri–Jubilee	92 10 0	92 10 0
Te Aroha–Karangahake–Waitawheta	199 14 0	199 14 0
Havelock–Tuamarina	679 0 0	679 0 0
Cullensville Road and track	50 0 0	50 0 0
Bonny Doon Road	1,785 17 7	1,785 17 7
Kaituna–Ferntown	300 0 0	300 0 0
Takaka–Collingwood "Inland" Road	3,773 19 11	3,773 19 11
Taitapu boundary Track	200 0 0	200 0 0
Bainham Bridge	578 10 0	578 10 0
Slate River road	200 0 0	200 0 0
Thorpe–Churchill	300 0 0	300 0 0
Shaggery Road	200 0 0	200 0 0
Motueka Valley–Baton	200 0 0	200 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.
Stanley Brook Bridge	300	0	0	300	0	0
Lyell Bridge–Ryan's	1,100	0	0	1,100	0	0
Wilson's Lead Road	1,100	0	0	1,100	0	0
Granity Creek southwards	1,550	0	0	1,550	0	0
Costello's Hill Road	1,050	0	0	1,050	0	0
Addison's Road–Buller Road	1,250	0	0	1,250	0	0
Mokihinui end of Westport Road	1,050	0	0	1,050	0	0
Fairdown to Beach	200	0	0	200	0	0
Charleston–Brighton	400	0	0	400	0	0
Millerton–Mine Creek	545	0	0	545	0	0
Mokihinui–Ngakawau	1,050	0	0	1,050	0	0
Waimangaroa–Birchfield	600	0	0	600	0	0
Lyell–Denniston Hill	300	0	0	300	0	0
Mountain Creek–Addison's	100	0	0	100	0	0
Cascade Creek Road	450	0	0	450	0	0
Eight Mile–Mokihinui	200	0	0	200	0	0
Cedar Creek–Denniston	200	0	0	200	0	0
Blackwater–Big River	600	0	0	600	0	0
Snowy Creek–Reefs	750	0	0	750	0	0
Reefton–Progress	300	0	0	300	0	0
Seven-mile Creek–Nine-mile Bluff	1,950	0	0	1,950	0	0
Moonlight–Blackball	350	0	0	350	0	0
Kotuku–Bell Hill	500	0	0	500	0	0
Teremakau Bridge–Payne's	200	0	0	200	0	0
Waipuna–Mosquito	150	0	0	150	0	0
Nelson Creek–Bell Hill	500	0	0	500	0	0
Paroa–Teremakau	1,141	0	0	1,141	0	0
Brown's Creek Bridge–Old Marsden Road	250	0	0	250	0	0
Saltwater Creek Bridge	250	0	0	250	0	0
Adair's Track (widening)	430	0	0	430	0	0
Seven-mile Creek–Taipo	1,150	0	0	1,150	0	0
Browning's Pass Track	485	1	0	485	1	0
Seddon's Terrace Track (extension)	500	0	0	500	0	0
Ogilvie's Beach Track	1,122	9	8	1,122	9	8
Kanieri Forks Road	450	0	0	450	0	0
Duffer's Road (widening)	300	0	0	300	0	0
Kanieri Lake Road	430	0	0	430	0	0
Dillman's Road–Nos. 4 and 5 Channels	210	6	0	210	6	0
Larrikin's Road	296	1	7	296	1	7
Saltwater Track	138	9	10	138	9	10
Whitcomb Valley Road	174	13	0	174	13	0
Lawrence–Roxburgh	600	0	0	600	0	0
Waitahuna–Lawrence	500	0	0	500	0	0
Lawrence–County Boundary	725	0	0	725	0	0
Beaumont–Rankleburn	100	0	0	100	0	0
Beaumont–Miller's Flat	200	0	0	200	0	0
Waitahuna–Round Hill	200	0	0	200	0	0
Wataroa Gorge Track	136	1	10	136	1	10
Nevis Valley Road	600	0	0	600	0	0
Cromwell Borough–Lowburn	200	0	0	200	0	0
Clyde–Cromwell (repairs)	500	0	0	500	0	0
Cromwell–Nevis	250	0	0	250	0	0
Crown Terrace–Cardrona	449	17	0	449	17	0
Queenstown–Gentle Annie	425	0	0	425	0	0
Arthur's Point–Moke Creek	260	0	0	260	0	0
Cardrona Coal-pit Road	250	0	0	250	0	0
Arrow Falls Road	300	0	0	300	0	0
Arthur's Point–Arrowtown	100	0	0	100	0	0
Sawyer's Gully Road	100	0	0	100	0	0
Road to dredging claims, Waimumu	200	0	0	200	0	0
Garston–Nevis (Southland County)	300	0	0	300	0	0
Nokomai Saddle Road	200	0	0	200	0	0
Waikaka Valley Main Road (repairs)	200	0	0	200	0	0
Central Charlton Road	100	0	0	100	0	0
Waikaka to Coal-pit	150	0	0	150	0	0
Picton–Grove	3,278	16	3	3,278	16	3
Hokitika–Jackson's	2,391	11	4	2,391	11	4
Reefton–Hokitika–Ross	18,474	9	10	18,474	9	10
Solberg's Hill	49	18	4	49	18	4
Upjohn's Hill	174	9	3	174	9	3
Main Grey Bridge (repairs)	2,414	9	11	2,414	9	11
Moonlight Creek Bridge	800	15	7	800	15	7
Great South Road	18,752	18	0	18,752	18	0
Okarito Forks–Waiho	1,960	13	8	1,960	13	8
Contingencies	1,242	9	3	1,242	9	3
	415,062	18	8	415,062	18	8

Locality and Nature of Works.	Total Cost.	Amount of Contribution paid by Mines Department.
Roads to open up Mines other than Gold.	£ s. d.	£ s. d.
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
Prospecting Deep Levels.		
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
Purchase of plant, machinery, and properties of Thames-Hauraki Goldfields (Limited)	6,099 18 1	6,099 18 1
	57,099 18 1	31,599 18 1
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	19,286 3 9	11,455 15 10
Te Aroha Town Board	334 0 0	167 0 0
Thames County	14,054 15 11	7,934 6 11
Thames Borough	3,836 19 2	2,471 15 0
Ohinemuri County	10,257 17 9	5,687 8 5
Waitoa Road Board	200 0 0	130 0 0
Piako County	22,498 2 3	14,691 6 10
Katikati Road Board	507 19 6	253 18 9
Hutt County	959 16 6	435 17 0
Marlborough County	1,715 4 0	933 18 8
Waimea County	1,459 8 8	729 14 4
Collingwood County	3,681 1 8	2,144 19 10
Buller County	11,638 1 4	6,600 16 8
Inangahua County	17,552 14 8	10,530 17 10
Grey County	21,019 4 0	12,773 11 3
Westland County	11,008 15 6	6,724 6 10
Taieri County	499 15 0	333 3 4
Lake County	7,145 6 1	4,926 14 6
Tuapeka County	16,195 7 8	9,063 7 2
Cromwell Borough	500 0 0	250 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	1,841 12 0	20 16 0
Southland County	2,455 0 0	1,476 7 4
	174,399 1 5	103,132 2 2
Diamond and other drills	5,170 11 4	3,428 11 4
Wharves	435 15 9	285 15 9
Aids to prospecting	80,606 14 10	30,879 7 9
Water-races	38,248 6 0	34,862 13 8
Drainage and tailings channels	37,266 16 2	23,978 1 9
Aid towards treatment of ores	3,213 10 6	2,563 10 6
Roads wholly constructed by Mines Department	415,062 18 8	415,062 18 8
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	57,099 18 1	31,599 18 1
Water-conservation on goldfields	22,978 1 6	21,978 1 6
	845,425 19 2	677,318 2 5

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, 1904.

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	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	655 5 3	718 7 6	63 2 3*	147,463 7 9		25·21	1,989	7,757 2 0	5 8 0
Kumara	1,466 2 1	1,612 2 10	146 0 9*	49,741 12 5	219,169 18 4	33·08	2,934	11,442 12 0	5 16 3
Kumara Sludge-channel	..	..	..	21,964 18 2		..	..	..	..
Callaghan's	..	..	..	90,722 10 8	90,722 10 8	..	..	..	..
Nelson Creek	..	..	..	15,151 15 3	15,151 15 3	..	..	..	..
Argyle	..	..	..	25,927 4 6	25,927 4 6	..	..	..	..
Mikonui	1,367 16 11	1,284 18 6	82 18 5	73,123 14 3	73,123 14 3	44·00	1,671	6,434 0 0	2 4 2
Mount Ida	67 3 9	4 8 0	62 15 9			2·00	120	462 0 0	3 17 3
Blackstone Hill	917 2 0	675 16 10	241 5 2	6,027 15 6	6,027 15 6	18·5	2,189	8,537 2 0	8 6 0
Totals	4,473 10 0	4,295 13 8	177 16 4	430,122 18 6	430,122 18 6	..	8,903	34,632 16 0	..

* Loss on working.

WARDEN'S COURT TABLES.

No. 1.

STATEMENT showing the REVENUE of the GOLDFIELDS collected in the several DISTRICTS of the COLONY of NEW ZEALAND, for the Period from 1st January to 31st December, 1903.

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 ..	55 15 0	79 0 0	..	280 17 9	9 11 0	31 8 0	2 2 0	458 13 9
Te Aroha ..	60 0 0	760 9 11	19 10 0	39 15 8	11 1 0	14 11 0	2 19 1	908 6 8
Ohinemuri ..	80 10 0	109 7 11	..	625 3 0	..	59 6 0	875 4 6	1,749 11 5
Thames ..	205 0 0	108 3 5	..	1,343 5 2	25 15 0	56 10 0	247 1 11	1,985 15 6
Whangarei ..	2 10 0	2 5 0	..	3 15 0	..	7	8 14 9	17 11 9
Tauranga ..	3 15 0	0 2 0	0 6 0	24 10 7	0 6 0	..	0 13 0	29 12 7
Waihi	138 0 0	..	..	1,660 7 4	31 10 0	53 12 0	415 9 5	2,298 18 9
Totals ..	545 10 0	1,059 8 3	19 16 0	3,977 14 6	78 3 0	215 14 0	1,552 4 8	7,448 10 5
NELSON.								
Motueka ..	0 10 0	..	..	11 15 0	1 2 0	..	2 6 0	15 13 0
Collingwood ..	16 10 0	1 0 0	1 5 0	382 9 11	4 8 0	23 8 0	36 18 0	465 18 11
Westport ..	90 5 0	3 16 0	4 10 0	1,011 11 3	25 15 0	49 12 0	51 1 6	1,236 10 9
Charleston ..	20 0 0	..	..	36 7 9	..	..	2 17 0	59 4 9
Ahaura	70 0 0	..	..	1,737 19 10	29 13 0	50 19 0	1 6 3	1,889 18 1
Reefton	57 5 0	..	..	2,040 4 8	..	42 16 0	103 4 11	2,243 10 7
Wangapeka ..	3 15 0	..	..	93 18 9	0 9 0	1 8 0	..	99 10 9
Lyell and Murchison	22 15 0	0 3 0	..	493 3 10	..	33 16 0	98 3 9	648 1 7
Takaka ..	2 0 0	..	0 5 0	28 17 2	0 6 0	..	2 15 0	34 3 2
Totals ..	283 0 0	4 19 0	6 0 0	5,836 8 2	61 13 0	201 19 0	298 12 5	6,692 11 7
MARLBOROUGH.								
Havelock ..	14 5 0	1 10 0	0 15 0	42 3 7	0 15 0	1 0 0	2 4 0	62 12 7
Blenheim ..	9 0 0	..	..	283 13 2	1 14 0	8 10 0	7 3 3	310 0 5
Totals ..	23 5 0	1 10 0	0 15 0	325 16 9	2 9 0	9 10 0	9 7 3	372 13 0
WESTLAND.								
Hokitika and Kanieri	59 5 0	..	1 0 0	761 12 4	16 14 0	24 2 0	2 2 0	864 15 4
Greymouth ..	116 10 0	..	1 10 0	1,566 15 2	..	74 10 6	2,669 10 10	4,428 16 6
Ross	18 0 0	..	1 0 0	524 13 8	12 17 6	9 8 0	11 13 0	577 12 2
Stafford	24 10 0	..	5 0 0	443 7 2	0 13 0	34 4 0	..	507 14 2
Okarito	14 5 0	..	..	109 9 5	2 8 0	6 4 0	8 1 2	140 7 7
Kumara ..	59 15 0	..	..	704 4 9	15 7 0	28 10 0	0 18 4	808 15 1
Totals ..	292 5 0	..	8 10 0	4,110 2 6	47 19 6	176 18 6	2,692 5 4	7,328 0 10
CANTERBURY.								
Ashburton ..	0 10 0	..	..	..	..	..	..	0 10 0
OTAGO AND SOUTHLAND.								
Middlemarch ..	1 15 0	..	0 5 0	3 10 0	0 3 0	0 6 0	..	5 19 0
Tapanui ..	2 10 0	..	0 9 0	19 6 6	0 8 0	0 8 0	..	23 1 6
Hindon	25 5 0	..	..	70 16 11	0 16 0	5 14 0	1 11 0	104 2 11
Naseby	58 15 0	16 4 9	12 10 0	535 12 10	0 3 0	55 9 0	53 14 0	732 8 7
Black's .. Alexandra Clyde .. Roxburgh	100 15 0	14 11 2	31 5 0	1,685 17 10	30 15 0	54 1 0	889 2 11	2,806 7 11
Cromwell ..	62 10 0	12 2 0	12 10 0	785 10 7	21 6 0	40 15 9	259 4 7	1,193 18 11
Queenstown ..	40 0 0	3 10 0	0 10 0	482 15 3	0 2 0	45 2 0	10 4 6	582 3 9
Arrowtown ..	17 5 0	4 0 0	1 0 0	276 10 6	0 1 0	19 7 0	8 17 0	327 0 6
Lawrence ..	56 15 0	0 19 0	4 15 0	944 6 5	13 0 0	23 7 0	7 12 0	1,050 14 5
Orepuki ..	40 15 0	..	..	7 10 6	..	14 3 0	17 11 0	79 19 6
Riverton and Longwood	26 0 0	..	..	443 18 6	..	6 4 0	16 15 0	492 17 6
Pembroke ..	5 10 0	..	..	4 0 6	..	..	..	9 10 6
Waikaia ..	7 5 0	10 4 0	1 4 0	329 3 3	1 10 0	9 15 0	18 2 6	377 3 9
Wyndham ..	2 5 0	..	0 5 0	23 15 0	0 1 0	..	..	26 6 0
Gore	6 5 0	..	0 15 0	248 6 0	2 14 0	9 14 0	0 5 0	267 19 0
Totals ..	453 10 0	61 10 11	65 8 0	5,861 0 7	70 19 0	284 5 9	1,282 19 6	8,079 13 9
Grand totals ..	1,598 0 0	1127 8 2	100 9 0	20,111 2 6	261 3 6	888 7 3	5,835 9 2	29,921 19 7

No. 2.

STATEMENT showing the REVENUE of the GOLDFIELDS collected in the several DISTRICTS of the COLONY of NEW ZEALAND, for the Period from the 1st January to the 31st March, 1904.

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.
Thames ..	75 0 0	35 5 9	..	264 1 5	6 7 0	14 1 0	67 11 0	462 6 2
Te Aroha ..	3 15 0	124 9 8	..	25 19 2	2 4 0	1 3 0	0 10 0	158 0 10
Coromandel ..	8 5 0	20 2 0	..	82 16 4	1 19 0	5 1 0	1 1 0	119 4 4
Ohinemuri ..	19 5 0	78 8 0	..	404 3 6	..	16 7 0	240 0 3	758 3 9
Whangarei ..	0 10 0	..	..	39 7 6	..	0 3 0	4 2 3	44 2 9
Tauranga ..	1 0 0	0 4 0	0 2 0	..	0 2 0	..	..	1 8 0
Waihi ..	52 16 0	..	..	562 15 7	12 10 0	14 19 9	124 17 7	767 12 2
Totals ..	160 5 0	258 9 5	0 2 0	1,379 3 6	23 2 0	51 14 0	438 2 1	2,310 18 0
NELSON.								
Collingwood ..	3 10 0	..	0 10 0	178 3 9	1 0 0	3 13 0	4 8 0	191 4 9
Westport ..	24 15 0	0 17 0	1 15 0	190 11 1	4 9 0	10 14 0	16 14 6	249 15 7
Charleston ..	9 15 0	..	..	13 8 9	0 10 0	..	..	23 13 9
Ahaura ..	15 10 0	..	..	472 17 5	3 13 0	11 8 0	..	503 8 5
Wangapeka ..	2 10 0	..	..	47 7 6	..	0 3 0	..	50 0 6
Reefton ..	12 15 0	..	..	539 15 5	..	13 19 0	17 0 6	583 9 11
Lyell and Murchison	5 10 0	0 2 0	..	61 10 6	0 1 0	4 19 0	50 6 3	122 8 9
Motueka ..	0 5 0	..	..	6 0 0	..	..	..	6 5 0
Takaka ..	..	..	..	4 8 9	0 2 0	..	0 5 0	4 15 9
Totals ..	74 10 0	0 19 0	2 5 0	1,514 3 2	9 15 0	44 16 0	88 14 3	1,735 2 5
MARLBOROUGH.								
Havelock ..	2 15 0	1 10 0	..	11 0 3	0 7 0	..	0 8 6	16 0 9
Blenheim ..	1 5 0	..	..	54 7 9	0 10 0	1 12 0	0 5 0	57 19 9
Totals ..	4 0 0	1 10 0	..	65 8 0	0 17 0	1 12 0	0 13 6	74 0 6
WESTLAND.								
Hokitika and Kanieri	17 10 0	..	3 0 0	243 7 6	4 18 0	17 1 0	0 5 0	286 1 6
Greymouth ..	23 15 0	..	0 5 0	701 12 11	..	18 19 6	563 13 8	1,308 6 1
Ross	6 0 0	..	2 0 0	37 17 6	5 5 0	1 6 0	0 11 1	52 19 7
Stafford ..	7 5 0	..	2 5 0	93 11 3	0 1 0	8 7 0	..	111 9 3
Kumara ..	12 10 0	..	..	335 15 8	2 6 0	5 10 0	..	356 1 8
Okarito ..	1 10 0	..	..	16 1 0	0 12 0	..	..	18 3 0
Totals ..	68 10 0	..	7 10 0	1,428 5 10	13 2 0	51 3 6	564 9 9	2,133 1 1
OTAGO AND SOUTHLAND.								
Tapanui ..	0 5 0	..	..	..	0 6 0	..	..	0 11 0
Hindon ..	9 5 0	..	..	32 15 0	0 2 0	..	0 15 0	42 17 0
Naseby ..	10 0 0	3 13 0	0 10 0	116 1 5	..	10 12 0	10 0 0	150 16 5
Roxburgh Alexandra Clyde Black's	17 0 0	0 5 0	3 0 0	631 12 11	6 3 0	21 7 0	167 12 8	847 0 7
Pembroke ..	1 5 0	..	..	..	0 12 0	..	..	1 17 0
Cromwell ..	16 15 0	11 16 0	2 0 0	292 16 5	3 2 0	6 4 0	302 4 0	634 17 5
Queenstown ..	6 5 0	0 5 0	..	115 19 11	..	3 15 0	1 13 6	127 18 5
Arrowtown ..	5 10 0	1 10 0	..	88 13 8	0 1 0	3 13 0	18 3 0	117 10 8
Lawrence ..	15 10 0	0 7 0	0 10 0	426 13 2	3 0 0	6 18 0	..	452 18 2
Waikaia ..	1 15 0	3 12 0	0 6 0	33 4 3	0 7 0	5 0 0	2 10 0	46 14 3
Orepuki ..	7 10 0	..	..	8 11 0	..	1 17 0	4 14 0	22 12 0
Riverton and Longwood	6 15 0	..	..	167 7 6	..	0 19 6	4 13 0	179 15 0
Wyndham ..	0 15 0	..	..	0 2 6	0 1 0	..	..	0 18 6
Middlemarch ..	0 10 0	..	..	3 4 6	0 2 0	0 2 0	..	3 18 6
Gore	2 5 0	..	..	118 5 0	2 11 0	2 10 0	0 5 0	125 16 0
Totals ..	101 5 0	21 8 0	6 6 0	2,035 7 3	16 7 0	62 17 6	512 10 2	2,756 0 11
Grand totals ..	408 10 0	282 6 5	16 3 0	6,422 7 9	63 3 0	212 3 0	1,604 9 9	9,009 2 11

No. 3.

COMPARATIVE RETURN of REVENUE derived from the GOLDFIELDS in the several DISTRICTS of NEW ZEALAND during the Years 1903 and 1902, 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 1902	609	579	8	4,675	57	167	1,045	22,012	29,152
Year 1903	545	1,059	20	3,978	78	216	1,552	23,475	30,923
Increase	..	480	12	..	21	49	507	1,463	1,771
Decrease	64	..	..	697	..	..	..	..	..
NELSON—									
Year 1902	364	21	8	5,338	28	128	832	..	6,719
Year 1903	283	5	6	5,836	62	202	298	..	6,692
Increase	..	..	..	498	34	74	..	..	..
Decrease	81	16	2	..	..	..	534	..	27
MARLBOROUGH—									
Year 1902	22	1	..	395	3	10	8	..	439
Year 1903	23	2	1	326	2	10	9	..	373
Increase	1	1	1	..	..	..	1	..	..
Decrease	..	..	..	69	1	..	..	..	66
CANTERBURY—									
Year 1902	1	..	..	1	..	..	..	..	2
Year 1903	1	..	..	..	..	..	..	..	1
Increase	..	..	..	..	..	..	..	..	..
Decrease	..	..	..	1	..	..	..	..	1
WESTLAND—									
Year 1902	381	..	19	4,586	53	156	3,206	..	8,401
Year 1903	292	..	9	4,110	48	177	2,692	..	7,328
Increase	..	..	..	..	..	21	..	..	..
Decrease	89	..	10	476	5	..	514	..	1,073
OTAGO—									
Year 1902	379	45	55	6,538	89	301	1,232	..	8,639
Year 1903	454	62	65	5,861	71	284	1,283	..	8,080
Increase	75	17	10	..	..	..	51	..	..
Decrease	..	..	..	677	18	17	..	..	559
Total increase	..	482	11	..	31	127	..	1,463	45
Total decrease	158	..	..	1,422	..	..	489	..	..

No. 4.

COMPARATIVE RETURN of the TOTAL AMOUNTS of GOLDFIELDS REVENUE (exclusive of Gold Duty) collected in the several Districts during the Years 1903 and 1902 and the Quarters ending 31st March, 1904 and 1903 respectively, showing the INCREASE or DECREASE in respect of each District.

District.	Years 1903 and 1902.				Quarters ending 31st March, 1904, and 31st March 1903.			
	1903.	1902.	Increase.	Decrease.	1904.	1903.	Increase.	Decrease.
AUCKLAND.	£	£	£	£	£	£	£	£
Coromandel	459	801	..	342	119	165	..	46
Te Aroha	908	574	334	..	158	166	..	8
Thames	1,986	2,076	..	90	462	683	..	221
Whangarei	17	69	..	52	44	6	38	..
Ohinemuri	1,749	2,658	..	909	758	747	11	..
Tauranga	30	..	30	..	2	6	..	4
Waihi	2,299	962	1,337	..	768	759	9	..
NELSON.								
Motueka	16	10	6	..	6	7	..	1
Collingwood	466	529	..	63	191	156	35	..
Westport	1,236	1,369	..	133	250	345	..	95
Charleston	59	94	..	35	24	23	1	..
Ahaura	1,889	1,849	40	..	503	477	26	..
Reefton	2,244	2,114	130	..	584	845	..	261
Wangapeka	100	49	51	..	50	35	15	..
Lyell and Murchison ..	648	705	..	57	122	132	..	10
Takaka	34	..	34	..	5	..	5	..
MARLBOROUGH.								
Havelock	62	131	..	69	16	17	..	1
Blenheim	311	308	3	..	58	80	..	22
WESTLAND.								
Hokitika ..	865	633	232	..	286	309	..	23
Kanieri ..								
Greymouth	4,429	5,567	..	1,138	1,308	1,712	..	404
Ross	577	814	..	237	53	235	..	182
Stafford and Goldsborough	508	341	167	..	112	153	..	41
Okarito	140	27	113	..	18	24	..	6
Kumara	809	1,019	..	210	356	141	215	..
CANTERBURY.								
Ashburton	1	2	..	1	..	..	..	..
OTAGO AND SOUTHLAND.								
Hindon	104	106	..	2	43	41	2	..
Naseby	732	614	118	..	151	218	..	67
Alexandra ..								
Black's ..	2,806	3,080	..	274	847	1,037	..	190
Clyde ..								
Roxburgh ..								
Cromwell	1,194	1,358	..	164	635	369	266	..
Arrowtown	327	490	..	163	117	151	..	34
Queenstown	582	519	63	..	128	166	..	38
Pembroke	10	8	2	..	1	2	..	1
Lawrence	1,051	1,249	..	198	453	429	24	..
Waikaia	377	346	31	..	47	63	..	16
Tapanui	23	30	..	7	1	18	..	17
Orepuki, Preservation, Longwood, and Riverton	573	450	123	..	202	220	..	18
Wyndham	27	69	..	42	1	17	..	16
Middlemarch	6	4	2	..	4	2	2	..
Gore	268	316	48	..	126	150	..	24
Totals	29,922	31,340	2,816	4,234	9,009	10,106	649	1,746
Net decrease ..	..	..	..	1,418	..	..	..	1,097
Net increase ..	..	..	..	..	..	..	..	..

No. 5.

RETURN of GOLD DUTY credited to LOCAL BODIES for the Year ended 31st December, 1903, and Quarter ended 31st March, 1904.

Local Body.	For the Year ended 31st December, 1903.	For the Quarter ended 31st March, 1904.
COUNTIES—	£ s. d.	£ s. d.
Coromandel	968 15 9	2 16 0
Ohinemuri	5,434 12 11	1,058 15 0
Piako	111 14 1	1 5 0
Tauranga	0 5 9	..
Thames	1,077 14 6	277 19 2
Whangarei	0 5 0	..
BOROUGHS—		
Te Aroha	0 1 3	..
Thames	423 1 1	124 17 6
Waihi	15,458 17 6	3,716 1 9
Totals	23,475 7 10	5,181 14 5

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, 1903.

PRODUCE OF THE GOLDFIELDS IN		DURING THE QUARTER ENDED 31ST DECEMBER, 1903.		ENTERED FOR EXPORTATION TO THE 30TH SEPTEMBER, 1903.		TOTAL ENTERED FOR EXPORTATION FROM NEW ZEALAND TO THE 31ST DECEMBER, 1903.	
County or Borough.	District.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
		Oz.	£	Oz.	£	Oz.	£
County of Thames ..	Auckland	2,937	12,541				
„ Ohinemuri ..		14,451	51,846				
„ Coromandel		4,834	20,354				
„ Piako ..		270	1,138				
Borough of Thames ..		1,091	4,526				
„ Waihi ..		35,983	125,954				
Great Barrier Island ..		26	91				
		59,592	216,450	3,182,104	11,850,727	3,241,696	12,067,177
	Wellington ..	..	..	188	706	188	706
County of Marlborough	Marlborough ..	..	..	88,626	345,324	88,626	345,324
County of Collingwood	Nelson	1,373	5,489				
„ Waimea ..		6	24				
		1,379	5,513	1,698,738	6,734,205	1,700,117	6,739,718
County of Buller ..	West Coast	1,083	4,346				
„ Inangahua ..		16,941	67,765				
„ Grey ..		9,471	37,885				
„ Westland ..		2,651	10,605				
Borough of Kumara ..		..	..				
„ Hokitika ..		19	76				
„ Ross ..		495	1,979				
		30,660	122,656	4,870,255	19,381,988	4,900,915	19,504,644
	Canterbury ..	..	..	99	387	99	387
County of Taieri ..	Otago	611	2,472				
„ Tuapeka ..		12,764	51,594				
„ Vincent ..		13,820	55,045				
„ Maniototo ..		1,372	5,522				
„ Waihemo ..		896	3,639				
„ Waitaki ..		548	2,212				
„ Lake ..		1,128	4,581				
„ Wallace ..		2,283	9,214				
„ Waikouaiti ..		..	..				
„ Bruce ..		527	2,113				
„ Clutha ..		3	13				
„ Fiord ..		20	81				
„ Southland ..		6,521	26,451				
„ Stewart Island		..	..				
		40,493	162,937	6,133,480	24,327,430	6,173,973	24,490,367
	Unknown ..	..	..	207	824	207	824
Totals		132,124	507,556	15,973,697	62,641,591	16,105,821	63,149,147

* Gold duty abolished in the South Island on 31st March, 1891, by "The Gold Duty Abolition Act, 1890."

No. 7.

COMPARATIVE RETURN for the YEARS ended 31st DECEMBER, 1902 and 1903.

PRODUCE OF THE GOLDFIELDS IN THE DISTRICT OF	DURING THE QUARTER ENDED—				TOTALS FOR YEAR 1903.		TOTALS FOR YEAR 1902.	
	31st March, 1903.	30th June, 1903.	30th September, 1903.	31st December, 1903.	Quantity.	Value.	Quantity.	Value.
	Oz.	Oz.	Oz.	Oz.	Oz.	£	Oz.	£
Auckland ..	46,447	68,215	58,427	59,592	232,681	832,334	201,583	721,977
Marlborough ..	..	..	972	..	972	3,845	601	2,404
Nelson ..	861	3,916	1,806	1,379	7,962	31,710	5,947	23,649
West Coast ..	33,623	20,725	40,233	30,660	125,241	501,090	118,796	475,272
Canterbury ..	..	..	..	..	..	..	2	7
Otago ..	37,021	46,390	42,554	40,493	166,458	668,852	181,116	728,124
Totals for 1903	117,952	139,246	143,992	132,124	533,314	2,037,831	..	..
Totals for 1902	98,727	133,676	140,444	135,198	..	..	508,045	1,951,433

* Gold duty abolished in the South Island on the 31st March, 1891, by "The Gold Duty Abolition Act, 1890."

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, 1904.

PRODUCE OF THE GOLDFIELDS IN		DURING THE QUARTER ENDED 31ST MAR., 1904.		ENTERED FOR EXPORTATION TO THE 31ST DECEMBER, 1903.		TOTAL ENTERED FOR EXPORTATION FROM NEW ZEALAND TO THE 31ST MARCH, 1904.	
County or Borough.	District.	Qu'ntity	Value.	Quantity.	Value.	Quantity.	Value.
		Oz.	£	Oz.	£	Oz.	£
County of Thames ..	Auckland	1,879	7,358				
" Ohinemuri ..		9,725	34,120				
" Coromandel ..		28	93				
" Piako ..		13	40				
Borough of Thames ..		470	1,651				
" Waihi ..		34,922	121,975				
Great Barrier Island ..		..	..				
		47,037	165,237	3,241,696	12,067,177	3,288,733	12,232,414
	Wellington ..	..	..	188	706	188	706
County of Marlborough	Marlborough ..	307	1,228	88,626	345,324	88,933	346,552
County of Collingwood ..	Nelson	1,102	4,385				
" Waimea ..		19	72				
		1,121	4,457	1,700,117	6,739,718	1,701,238	6,744,175
County of Buller ..	West Coast	3,890	15,517				
" Inangahua ..		15,320	61,280				
" Grey ..		10,230	40,922				
" Westland ..		4,908	19,633				
Borough of Kumara ..		..	..				
" Hokitika ..		..	..				
" Ross ..		218	872				
		34,566	138,224	4,900,915	19,504,644	4,935,481	19,642,868
	Canterbury ..	..	..	99	387	99	387
County of Taieri ..	Otago	502	2,027				
" Tuapeka ..		10,219	41,352				
" Vincent ..		15,793	63,824				
" Maniototo ..		2,452	9,867				
" Waihemo ..		1,161	4,687				
" Waitaki ..		424	1,715				
" Lake ..		2,087	8,463				
" Wallace ..		1,786	7,196				
" Waikouaiti ..		..	..				
" Bruce ..		132	538				
" Clutha ..		..	..				
" Fiord ..		42	170				
" Southland ..		7,454	30,129				
Stewart Island ..		..	..				
		42,052	169,968	6,173,973	24,490,367	6,216,025	24,660,335
	Unknown ..	..	..	207	824	207	824
Totals ..	..	125,083	479,114	16,105,821	63,149,147	16,230,904	63,628,261

*Gold duty abolished in the South Island on 31st March, 1891, by "The Gold Duty Abolition Act, 1890."

No. 9.

COMPARATIVE RETURN for the QUARTERS ended 31ST MARCH, 1904 and 1903.

District.	Quarter ended 31st March, 1904.		Quarter ended 31st March, 1903.	
	Quantity.	Value.	Quantity.	Value.
	Oz.	£	Oz.	£
Auckland	47,037	165,237	46,447	163,501
Wellington	..	..	..	..
Marlborough	307	1,228	..	..
Nelson	1,121	4,457	861	3,348
West Coast	34,566	138,224	33,623	134,469
Canterbury	..	..	..	..
Otago	42,052	169,968	37,021	148,679
Unknown	..	..	..	..
Totals	125,083	479,114	117,952	449,997

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 December, 1902.

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—	Thames	2 16 0	0 5 6	£3 to £4	..
	Coromandel	£2 10s. to £3 2s. 6d.	0 10 0	..	..
	Paeroa	4 4 0	..	..	No public batteries; no water sold.
	Te Aroha	4 4 0	..	..	No public batteries.
	Puhipuhi	..	..	..	None sold on field.
	Tauranga	..	..	..	
MARLBOROUGH—	Havelock	3 17 0	..	..	..
	Blenheim	£3 12s. to £3 15s.	1 0 0	..	..
NELSON—	Wangapeka	£3 12s. to £3 15s.	..	..	..
	Motueka	3 14 0	..	..	..
	Charleston	3 19 0	0 1 6	2 5 0	..
	Inangahua	£3 18s. to £4 4s.	..	..	..
	Collingwood	3 14 6	..	..	..
	Takaka	3 14 6	..	..	..
	Westport	3 17 10	..	..	..
	Murchison .. Lyell	3 17 6	0 10 0	..	..
WESTLAND—	Hokitika, Kanieri, and Waimea ..	3 18 0	..	2 0 0	40 in.
	Totara and Ross	3 18 0	..	..	..
	Stafford	3 18 0	..	1 10 0	..
	Greymouth	3 18 0	0 12 0	0 10 0	..
	Kumara	3 18 0	..	1 0 0	20 in. by 2 in. opening.
	Ahaura	3 18 6	0 10 0	1 0 0	..
	Okarito	3 18 0	..	..	..
OTAGO AND SOUTHLAND—	Hindon	3 17 0	..	..	..
	Tuapeka	3 17 6	..	3 0 0	..
	Longwood	3 10 6	..	..	..
	Preservation and Waiau ..	3 15 6	..	..	..
	Orepuki and Round Hill ..	3 18 6	..	..	..
	Arrow (Wakatipu Goldfield) and Queenstown	3 17 0	0 8 0	0 4 0	20 in. by 2 in.
	Mount Ida .. Macrae's, Hyde .. Hamilton, Serpentine	3 17 0	..	1 0 0	40 in. by 1 in.
	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 6	..	1 15 0	..
	Tapanui	3 17 6	..	..	..
	Wyndham	£3 16s. to £3 18s.	..	..	..
	Roxburgh .. Clyde and Alexandra Black's	3 17 0	..	..	Water used by owners.
	Gore	4 0 0	..	..	..

No. 11.

RETURN showing the AVERAGE PRICES of PROVISIONS and LIVE-STOCK for the Year ending 31st December, 1903.

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.
			d.							£		£			d.	d.	d.	d.	d.	d.	d.			
AUCKLAND—																								
Thames	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/
Paeroa..	80/	17/	2	1/1	/9	/7½	1/6	15/	5/9	6/10–9	..	12–40	15/–20/	40/–60/	5	4½	6	4	2½	1	2½	1/6	5/6	18/
Coromandel	90/	25/	2½	1/	/8	/6	1/10	14/6	4/	6	10/	15	10/	20/	4	4	6	3	3	1	3	2/	6/	12/
Tauranga	90/	30/	2	/10–/1	..	/8	1/3–2/	13/6	5/6	7–9	..	10	17/	30/	3–9	3½–6	5–8	3	3	1	3½	1/–2/10	5/6–6/6	18/
Te Aroha	80/	17/	2	1/1	/9	/7½	1/6	15/	5/9	6/10–9	..	12–40	15/–20/	40/–60/	5	4½	6	4	2½	1	2½	1/6	5/6	18/
Waihi	95/	27/6	1¾	1/1	1/	/8	1/–1/10	14/3	4/9	7	..	20–40	15/	10/	5	5	6	4	3	1	2½	1/–3/	5/6	..
MARLBOROUGH—																								
Blenheim	84/	30/	1½	/10	/9	/7	1/9	10/6	3/	7	..	20–40	10/	25/	5	4¼	6	3	3	1	3	1/10	5/6	18/
Havelock	90/	28/	2	/10	..	/7	2/	13/	6/	5–15	..	10–40	18/	..	6	5	..	4	3½	1	3	2/	6/	20/
NELSON—																								
Wangapeka	..	..	/6–/7	/9–/10	/9	/9	1/8	14/	4/	5–7	..	15–30	8/–13/	10/–60/	6	5–6	7	4	3	1	3	2/–3/	7/	..
Collingwood	95/	30/	2	/11	/8	/8	1/9–2/6	15/	5/6	6/10–7/10	..	10–50	12/	10/–25/	6	5	6	4	3	2	4	1/10–2/6	6/	16/
Takaka	90/	25/	3½	/11	/7	/8	1/9	11/	4/	7	..	7–50	12/	15/–30/	5	3	5	4	4	1	3	2/	6/	12/
Inangahua	90/	25/	2	1/1	/11	/8	2/	15/	4/6	7/10/0	10/	7–70	20/	50/	5–7	6	6	5	3	1	3	2/	6/	15/–24
Lyell .. }	110/	26/	2½	1/2	1/	/9	2/	15/6	7/	5/10/0	..	20	16/	50/	4½	4½	6	4	4	2	3½	2/	6/	20/
Murchison .. }																								
Westport	80/	26/	2	1/	/9	/7	2/	12/6	5/	7/10/0	15/	25	16/	60/	6	5	6	5	3	1	2½	1/9	5/6	16/6
Charleston	80/	26/	2	1/	1/	/8	2/	12/9	5/6	7	5/	15	20/	50/	6	6	6	6	4	1	3	1/10	6/	16/
Ahaura	112/6	25/	2	1/	/9	/8	2/	16/	6/	6–12	5/	15–60	15/	20/–60/	5	5	7	4	3	2	3	2/	5/6–6/6	15/
WESTLAND—																								
Stafford .. }	100/	30/	2	1/	..	/8	1/6–/2	7/	5/6	9	5/	20	17/6	40/	6	6	8	6	3	1	3	2/	5/6–6/6	26/
Waimea .. }																								
Hokitika and Kanieri ..	85/	25/	1¾	/8	/7	/7	1/6	11/6	4/	7	..	35	15/	40/	4	5	7	6	2½	1	2½	2/6	5/6	15/
Ross	120/	25/	2	1/3	1/	/8	4/	13/6	5/	8	..	10–60	15/	50/	8	6	10	6	2½	2	3	2/4	/7	20/
Okarito	120/	30/	3	1/6	..	/9	1/9	17/	6/6	7–9	..	16–45	20/	..	..	5½	6½	..	..	5	2	3	3/	7/	..
Kumara	85/	23/6	2	1/3	1/	/8	1/6	17/	6/	8–13	10/	9–40	19/	45/–100/	8	8	8	6	2½	1	3	1/9	6/	15/
Greymouth	90/	26/	1¾	1/2	1/1	/7	1/9	11/	5/	3–9/10	..	9–43	9/–15/	18/–65/	4–8	4–7	7	4	2½	1¼	2½	2/	5/	16/6
OTAGO—																								
Hindon	..	..	2	1/3	/10–1/	/9	1/3	16/	..	6–12	..	12–40	12/–16/	..	4–8	4½	..	4	3½	1½	3½	2/	6/	..
Tuapeka	90/	26/	1½	1/	/10	/6	1/10	9/	3/6	6	..	20–50	10/	30/	6	4	6	3	2	1	3	1/10	5/6	18/
Tapanui	..	..	1½	/8	/8	/7½	1/11	10/6	3/	7	..	35	16/	40/	4	4	4½	3½	3	1	2	1/10	5/10	..
Cromwell	100/	27/	2	1/3	1/	/9	1/9	10/	3/6	9	..	15–60	12/6–25/	40/	7	6	6	4	3	1½	3½	2/	5–7/6	18/
Clyde .. }																								
Alexandra .. }	100/	28/	2	1/3	1/	/7	1/9	12/6	5/6	3–8	..	10–50	14/	45/	6	5	7	5	2	1½	3	2/	5/–7/	18/
Roxburgh .. }																								
Black's .. }																								
Queenstown	85/	29/	1¾	1/	/10	/8	1/8	13/	2/6	5	..	15–40	18/	60/	6	6	7	4	3	1	3	2/	7/	26/
Wyndham	90/	35/	1½	/9	/8	/7	1/7	11/	3/	8	..	25	15/	20/	6	6	6	4	2½	1	2½	1/9	5/6	20/
Arrow (Wakatipu Goldfield)	90/	30/	1¾	1/	/10	/9	1/6	14/	3/	7	..	20–45	18/	60/	6	6	8	4	4	1	3	2/	7/	26/
Mount Ida .. }	102/	27/–42/	3½	1/2	/11	/8	1/9	14/	4/	7–10	..	12–45	15/–20/	50/–60/	6½–7½	5–6	6–7	4	3	2	3	1/6–2/4	5/3–8/	18/–25/
Nenthorn .. }																								
Waikaia	90/	30/	2	1/	/10	/9	2/	7/	..	6–10	..	10–40	12/6–21/	25/–45/	7	6	6	4	4	2	4	1/9–3/	6/	21/
Riverton and Orepuki ..	83/	36/	1½	/10	/8	/8	2/	11/	4/	5	..	25	16/	45/	5	4	6	3	2½	¾	3	1/9	5/	..
Gore	..	..	1½	/8	/6	/8	1/8	11/	3/6	10	..	50	17/6	40/	6	5	4½	3	2½	1	2½	2/	5/	..

No. 12.

TABLE showing the AVERAGE RATE of WAGES per WEEK for the Year ending 31st December, 1903.

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.	
Coromandel	£4 10s. to £9	£1/10–£2/10	£3 to £4	3 0 0	2 14 0	2 5 0	2 14 0	2 14 0	2 8 0	2 5 0	1 4 0	..	1 10 0	9/
Thames	£500 to £1000	£1 to £2	£3 to £5	£3 to £3/10	2 14 0	2 8 0	2 8 0	3 0 0	2 5 0	2 2 0	5/ to 30/	..	1 16 0	5/ to 10/
Te Aroha	500 0 0	..	5 0 0	4 10 0	2 14 0	2 8 0	3 3 0	3 3 0	£2/11 to £3	2 8 0	1 10 0	..	£1/10 to £2	10/ to 15/
Paeroa	£150 to £1200	£1 to £2	£4 to £10	£4 to £8	£2/10 to £3	£2/5–£2/11	£2/14 to £3	£2/17 to £3/10	£2/8 to £3/10	£2 to £2/10	£1 to £2	..	10/ to £1/10	10/ to 17/6
Tauranga	..	..	4 10 0	3 10 0	3 0 0	2 5 0	2 10 0	3 0 0	2 14 0	2 2 0	0 15 0	..	1 5 0	12/
Waihi	..	£1 to £2	£4 to £8	£4 to £6	£2/10 to £3	£2/5–£2/11	£2/14 to £3	£2/17 to £3	£2/8 to £3	£2/5 to £2/8	1 10 0	..	1 16 0	12/6
MARLBOROUGH—														
Havelock	..	..	3 10 0	..	2 14 0	2 8 0	2 14 0	3 0 0	2 14 0	2 8 0	..	..	£1/15 to £2	12/ to 20/
Blenheim	..	..	3 0 0	3 0 0	2 14 0	2 8 0	2 8 0	3 0 0	2 14 0	£2/2 to £2/8	12/ to £1	..	£1 and found	8/ to 20/
NELSON—														
Collingwood	£8 to £10	..	£8 to £10	£3/10 to £4	3 0 0	2 10 0	3 6 0	..	2 17 0	2 14 0	..	..	£2/5 to £3	10/ to 20/
Takaka	..	..	5 0 0	3 0 0	3 0 0	..	2 8 0	2 14 0	2 11 0	£2/2 to £2/8	15/ and found	..	£1/5 & found	7/ to 10/
Inangahua	..	£1 to £2	£4 to £10	4 0 0	£3/10 to £4	3 0 0	£3/10 to £4	£3/10 to £4	£2/17 to £3	2 11 0	1 0 0	..	£1 to £1/5	5/ to 20/
Charleston	..	..	5 0 0	3 12 0	3 10 0	3 0 0	3 10 0	3 10 0	3 0 0	2 8 0	15/ and found	..	£1/ & found	10/
Westport	..	10/ to 20/	4 0 0	..	3 0 0	2 14 0	3 0 0	3 12 0	2 14 0	2 8 0	1 10 0	..	..	12/ to 20/
Lyell and Murchison ..	..	..	5 0 0	4 0 0	3 10 0	2 15 0	3 10 0	3 5 0	3 0 0	2 8 0	1 0 0	0 15 0	..	10/
Ahaura	..	£1 to £1/5	5 0 0	4 0 0	3 0 0	3 0 0	3 6 0	3 12 0	2 14 0	2 8 0	1 10 0	1 5 0	1 0 0	12/6
WESTLAND—														
Waimea and Stafford ..	8 0 0	3 0 0	5 0 0	3 10 0	3 0 0	2 10 0	2 8 0	3 0 0	2 14 0	2 8 0	0 15 0	2 8 0	1 5 0	10/
Hokitika and Kanieri ..	..	1 10 0	4 0 0	4 0 0	3 12 0	3 0 0	3 0 0	4 4 0	2 14 0	2 14 0	1 16 0	1 16 0	1 16 0	10/
Ross	..	1 7 0	6 0 0	4 10 0	3 0 0	..	3 0 0	3 0 0	3 0 0	2 14 0	1 10 0	..	..	9/
Kumara	6 0 0	2 0 0	4 0 0	3 10 0	3 0 0	..	3 0 0	£3 to £4	3 0 0	2 18 0	1 0 0	..	..	7/ to 20/
Greymouth	..	£1 to £1/10	£4 to £6	£3 to £5	3 0 0	2 10 0	£3 to £3/15	£3 to £3/18	£2/10 to £3	£2/2 to £3	8/ to 20/	20/–30/ found	£1/2 & found	7/6 to 20/
Arlto	..	..	..	4 0 0	3 0 0	..	4 4 0	4 4 0	..	2 14 0	..	..	25/–30/ found	10/
OTAGO AND SOUTHLAND—														
Hindon	..	1 10 0	5 0 0	..	2 14 0	..	3 0 0	..	£2/8 to £2/14	2 2 0	..	..	..	..
Tuapeka	5 0 0	2 0 0	3 10 0	5 0 0	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 14/
Tapanui	..	..	4 10 0	4 10 0	3 10 0	..	3 0 0	3 0 0	2 15 0	2 2 0	1 0 0	..	2 2 0	13/
Cromwell	£4 to £6	£1 to £4	4 10 0	4 10 0	3 0 0	3 0 0	£3 to £3/12	£3 to £3/10	3 0 0	£2/8 to £2/14	15/ to £1/10	£1/5 to £1/10	15/ to 35/ and found	6/ to 20/
Clyde ..														
Alexandra ..	4 10 0	1 5 0	5 0 0	4 0 0	3 0 0	3 0 0	4 0 0	4 0 0	3 0 0	2 8 0	1 0 0	1 5 0	£1/5 & found	12/6 to 15/
Black's ..														
Roxburgh ..														
Waikaia	..	2 0 0	4 0 0	5 0 0	2 10 0	..	3 0 0	3 0 0	2 8 0	2 0 0	0 15 0	1 0 0	1 0 0	12/6
Orepuki and Riverton ..	..	1 13 0	3 3 0	..	..	..	2 14 0	2 14 0	2 8 0	..	1 0 0	0 6 0	..	10/
Arrow	5 0 0	2 10 0	4 10 0	4 0 0	3 0 0	3 0 0	3 10 0	3 0 0	3 0 0	2 8 0	1 5 0	1 8 0	1 10 6	14/
Queenstown	5 0 0	2 10 0	4 10 0	4 0 0	3 0 0	3 0 0	3 10 0	3 0 0	3 0 0	2 8 0	1 5 0	1 8 0	1 10 0	14/
Mount Ida	..	..	4 0 0	..	..	..	3 0 0	3 0 0	2 8 0	£2/2 to £2/8	10/ to 15/ found	£1 and found	20/–25/ found	7/ to 12/
Gore	..	1 5 0	4 0 0	2 8 0	2 8 0	2 8 0	3 0 0	3 0 0	1 10 0	2 8 0	..	..	2 2 0	10/
Wyndham	..	..	..	..	..	..	3 0 0	3 0 0	2 2 0	2 2 0	0 15 0	..	2 2 0	..

No. 13.

NUMBER of MACHINES employed in ALLUVIAL and QUARTZ MINING, and the VALUE thereof, for the Year ending 31st December, 1902.

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—																								
Paeroa	..	..	..	..	..	..	..	..	..	..	..	..	..	..	16	1,342	11	305	10	..	..	..	..	149,710
Coromandel ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	24	706	..	168	5	..	..	..	..	94,896
Thames	..	..	..	..	..	..	..	..	..	..	..	..	..	..	27	1,252	..	462	..	..	..	..	154	179,892
Te Aroha	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Waihi	..	..	..	..	..	..	..	..	..	..	..	..	..	..	25	3,594	4	345	9	..	..	..	..	257,640
Totals ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	92	6,894	15	1,280	24	..	..	..	154	682,138
MARLBOROUGH—																								
Wakamarina ..																								
Cullen's Creek ..	..	..	..	..	..	20	..	..	..	..	.	1	..	..	..	..	..	..	..	..	..	..	..	1,000
Waikakaho ..																								
Blenheim ..	..	..	..	..		2	..	1	..	1	..	..	..	..	..	..	2	20	..	..	..	..	..	7,000
Totals ..	..	..	..	..	..	22	..	1	..	1	..	1	..	..	..	..	2	20		..	..	..	..	8,000
NELSON—																								
Wangapeka ..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	10,000
Collingwood ..	..	..	..	..	..	4	..	10	..	..	..		..	..	2	16	2	28	1	..	..	..	..	55,000
Takaka	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Inangahua ..	..	..	..	..	..	..	..	..	..	5	..	..	..	..	30	800	22	440	28	2	3	..	65	216,362
Charleston ..	..	..	..	..	..	84	4	71	..	..	..	..	16	..	..	..	..	..	..	..	..	..	..	650
Lyell	..	..	..	..	..	88	..	6	..	6	..	..	..	..	..	..	2	30	..	..	..	..	..	30,000
Murchison ..	..	..	..	..	..	455	1	8	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	20,000
Westport	..	..	..	..	..	35	5	20	..	..	..	..	17	..	..	..	3	14	3	..	..	..	..	11,500
Ahaura	..	..	..	..	..	700	1	500	..	22	..	..	..	..	..	..	2	11	2	..	..	..	..	120,000
Totals ..	..	..	..	..	..	1,366	11	619	..	38	..	..	33	..	32	816	31	521	34	2	3	..	65	463,512
WESTLAND—																								
Stafford	..	..	..	3	8	8,000	7	100	4	1	6	..	..	..	..	..	..	..	3	..	..	..	..	40,000
Ross	..	..	..	..	..	20	..	13	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	29,300
Hokitika and Kanieri	..	..	..	..	..	60	1	..	.	4	..	..	8	..	..	..	..	..	..	..	..	..	..	10,000
Greymouth ..	..	..	..	..	..	160	..	609	28	9	14	1	..	2	..	..	..	..	..	..	..	..	..	68,210
Kumara	1	4	..	..	..	155	2	90	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	25,050
Totals ..	1	4	..	3	8	8,395	10	812	32	21	20	1	8	2	..	..	..	..	3	..	..	..	..	172,560
OTAGO AND SOUTHLAND																								
Tapanui	..	..	..	..	..		..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	3,000
Hindon	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	16	1	5	..	..	..	..	..	710
Tuapeka	..	..	..	..	..	500	..	40	..	22	..	..	..	..	2	16	3	15	2	..	..	..	..	90,000
Cromwell	..	..	..	..	..	..	5	10	..	25	..	..	..	..	4	30	4	30	1	..	..	..	..	150,000
Clyde and Alexandra																								
Roxburgh ..	..	..	..	..	2	1,590	2	25	..	53	..	..	..	1	..	..	2	15	..	1	1	..	..	320,000
Black's																								
Orepuki, Riverton, and Preservation	2	27	..	..	..	275	..	8	1	1	..	..	..	..	3	32	4	20	2	..	..	..	..	6,000
Waikaia (Switzers)	..	..	..	..	..	150	..	28	..	10	..	..	..	..	..	..	..	..	..	..	..	..	..	40,000
Arrow	1	4	..	..	..	20	..	12	2	2	..	1	..	1	1	4	1	10	..	..	..	1	..	6,000
Queenstown ..	..	..	..	..	..	400	..	50	2	2	..	..	..	..	1	8	5	15	..	..	..	..	..	45,000
Naseby																								
Kyeburn and Clarke's																								
Hamilton's and Sowburn																								
Hyde and Fullerton's																								
Macrae's, Strath Taieri, and Shag Valley	1	7	41	..	..	117	..	67	..	3	..	..	..	..	4	47	8	52	6	..	..	..	..	64,815
Serpentine ..																								
St. Bathan's, Ida Valley, &c.																								
Gore	..	..	..	..	..	..	..	..	..	31	..	..	..	..	..	..	..	..	..	..	..	..	..	72,000
Totals ..	4	38	41	..	2	3,052	7	240	5	151	..	1	..	2	17	153	28	162	11	1	1	1	..	797,525

SUMMARY.

Auckland	..	..	..	..	..	..	..	..	..	..	..	..	..	..	92	6,894	15	1,280	24	..	..	..	154	682,138
Marlborough ..	..	..	..	..	..	22	..	1	..	1	..	1	..	..	..	..	2	20	..	..	..	..	..	8,000
Nelson	..	..	..	..	..	1,366	11	619	..	38	..	..	33	..	32	816	31	523	31	2	3	..	65	463,512
Westland	1	4	..	3	8	8,395	10	812	32	21	20	1	8	2	..	..	..	..	3	..	..	..	..	172,560
Otago	4	38	41	..	2	3,052	7	240	5	151	..	1	..	2	17	153	28	162	11	1	1	1	..	797,525
Totals ..	5	42	41	3	10	12,835	28	1,672	37	211	20	3	41	4	141	7,863	76	1,985	69	3	4	1	219	2,123,735

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 December, 1903.

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—													
Coromandel ..	6	6	21	4,500	..	..	3	510	3	50	..	..	5,060
Thames	19	25	160	58,000	7	360	70	770	2	5,000	..	..	64,130
Te Aroha ..	1	3	15	3,000	..	..	1	200	..	..	..	..	3,200
Paeroa	166	197	2,451	120,946	1	1,000	35	5,000	3	3,000	..	..	129,946
Totals ..	192	231	2,647	186,446	8	1,360	109	6,480	8	8,050	..	..	202,336
MARLBOROUGH—													
Blenheim ..	27	21	128	3,300	9	165	6	..	..	..	..	..	3,465
Havelock ..	11	7	21	500	..	..	2	50	..	..	20	90	640
Totals ..	38	28	149	3,800	9	165	8	50	..	..	20	90	4,105
NELSON—													
Wangapeka, Baton, and Sherry	2	4	2	250	2	100	..	..	..	..	1	50	400
Collingwood ..	106	127	1,079	139,116	70	7,995	75	10,984	..	..	6	..	158,095
Inangahua ..	506	403	3,640	162,113	544	52,935	623	23,336	..	..	..	..	238,384
Charleston ..	102	131	480	29,504	117	10,337	297	9,297	..	..	86	380	49,518
Westport ..	241	164	1,308	16,753	186	24,347	396	13,480	..	..	..	..	54,580
Lyell	109	99	280	9,400	24	2,425	22	2,250	..	..	..	..	14,075
Murchison ..	243	188	943	6,750	72	2,575	60	3,750	..	..	..	..	13,075
Ahaura	175	400	1,500	150,000	75	17,400	75	2,709	..	..	..	..	170,109
Motueka ..	2	2	2	50	..	..	2	10	..	..	..	..	60
Takaka	7	5	45	2,250	6	100	6	60	..	..	6	..	2,410
Totals ..	1,493	1,523	9,279	516,186	1,096	118,214	1,556	65,876	..	..	99	430	700,706
WESTLAND—													
Hokitika & Kanieri	308	200	646	152,000	129	3,400	312	3,140	..	..	..	..	158,540
Ross	143	115	520	59,505	160	1,500	76	2,050	..	..	6	700	63,755
Kumara ..	200	109	466	60,033	193	1,550	69	4,750	11	7,000	30	600	73,933
Greymouth ..	498	435	2,005	16,957	817	19,333	1,025	13,821	..	..	..	..	50,111
Okarito	13	10	87	5,300	1	24	1	20	..	..	1	1,500	6,844
Stafford	220	310	500	31,000	220	10,100	310	5,400	10	2,000	2	4,000	52,500
Totals ..	1,382	1,179	4,224	324,795	1,520	35,907	1,793	29,181	21	9,000	39	6,800	405,683
OTAGO AND SOUTHLAND—													
Hindon	25	25	100	5,000	5	70	3	351	..	..	5	31	5,452
Tuapeka ..	325	910	1,830	17,800	430	9,000	315	8,000	..	..	..	..	34,800
Tapanui	2	4	8	185	..	..	..	..	..	..	..	..	185
Clyde, Alexandra, Black's, and Roxburgh	630	1,500	2,680	90,000	340	16,000	150	17,500	2	7,500	..	..	131,000
Arrow	97	176	196	13,971	132	4,773	25	14,000	..	..	..	..	32,744
Cromwell ..	564	1,459	2,262	104,440	312	14,688	239	11,280	..	..	..	..	130,408
Waikaia ..	230	400	900	40,000	200	2,000	120	240	..	..	20	60	42,300
Riverton and Orepuki	122	194	607	22,811	10	5,045	45	1,087	..	..	..	..	28,943
Queenstown ..	144	234	883	56,455	159	9,950	42	1,745	..	..	..	..	68,150
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	770	1,927	2,777	57,772	758	23,470	366	20,010	..	..	..	..	101,252
Wyndham ..	21	16	33	1,900	..	..	..	..	..	..	..	..	1,900
Gore	2	7	9	350	..	..	1	40	..	..	..	..	390
Totals ..	2,932	6,852	12,285	410,684	2,346	84,996	1,306	74,253	2	7,500	25	91	577,524

SUMMARY.

Auckland	192	231	2,647	186,446	8	1,360	109	6,480	8	8,050	..	..	202,336
Marlborough ..	38	28	149	3,800	9	165	8	50	..	..	20	90	4,105
Nelson	1,493	1,523	9,279	516,186	1,096	118,214	1,556	65,876	..	..	99	430	700,706
Westland	1,382	1,179	4,224	324,795	1,520	35,907	1,793	29,181	21	9,000	39	6,800	405,683
Otago	2,932	6,852	12,285	410,684	2,346	84,996	1,306	74,253	2	7,500	25	91	577,524
Totals ..	6,037	9,813	28,584	1,441,911	4,979	240,642	4,772	175,840	31	24,550	183	7,411	1,890,354

No. 15.

RETURN of CASES in the WARDENS' COURTS, and COSTS AWARDED, for the Year ending 31st December, 1902.

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.	
Coromandel	5	27 4 0	8 16 0	14 7 0	..
Thames	12	802 0 7	707 13 4	19 4 0	2
Te Aroha	11	65 1 11	12 3 11	0 11 0	..
Paeroa	41	283 1 6	244 18 10	38 6 9	..
Waihi	19	471 9 6	13 11 3	39 16 8	1
MARLBOROUGH	6	4 12 6	4 12 6	9 6 0	2
NELSON—					
Inangahua	5	1,084 0 0	82 13 0	14 3 4	..
Collingwood	5	142 17 5	131 0 5	11 14 6	4
Lyell and Murchison	31	360 9 3	42 9 3	15 1 0	..
Westport	35	941 10 10	653 14 4	76 14 2	..
Charleston	..	..	..	..	..
Takaka	1	100 0 0	..	..	..
Wangapeka	1	9 17 6	9 17 6	..	..
WESTLAND—					
Kumara	17	214 6 2	200 6 2	6 6 5	..
Greymouth	27	1,170 8 1	803 2 1	13 7 0	14
Hokitika and Kanieri	37	196 11 2	50 0 0	29 16 0	1
Stafford	6	275 0 0	..	21 17 0	77
Ross	..	..	..	..	..
Ahaura	24	449 15 6	427 8 9	22 6 4	..
Okarito	..	..	..	..	3
CANTERBURY—					
Ashburton	..	..	..	..	..
OTAGO AND SOUTHLAND—					
Tapanui	1	20 0 0	..	2 10 0	1
Hindon	..	..	..	..	..
Tuapeka	6	45 10 0	30 0 0	18 3 0	..
Cromwell	48	491 3 6	254 2 6	22 8 0	..
Roxburgh					
Black's	38	1,133 19 11	380 9 6	97 0 6	..
Clyde and Alexandra ..					
Waikaia	5	80 0 0	40 0 0	14 0 0	..
Orepuki, Longwood, and Riverton ..	4	669 9 0	55 10 9	6 7 0	..
Arrow (Wakatipu Goldfield) ..	12	83 14 6	83 14 6	5 3 0	4
Queenstown	19	265 16 3	57 10 9	7 12 0	3
Gore	10	430 0 0	180 0 0	12 13 0	2
Mount Ida	20	360 18 5	190 13 7	84 0 5	7
Wyndham	..	..	..	..	..
Totals	446	10,178 17 6	4,664 8 11	602 14 1	121

No. 16.

RETURN of the NUMBER of MINING LEASES or LICENSES in Force on the 31st December, 1903, the EXTENT of GROUND LEASED or held under LICENSE, and RENTAL per ANNUM.

Mining Leases.

District.	No.	Gross Acreage.	Rental per Annum.
		A. R. P.	£ s. d.
AUCKLAND—			
Coromandel	107	4,001 0 0	448 1 6
Thames	130	6,479 0 2	1,267 2 6
Te Aroha	7	283 1 27	61 19 0
Paeroa	72	3,451 1 7	1,006 14 0
Puhipuhi	14	426 0 0	56 10 0
Waihi	59	4,593 0 3	1,215 12 6
MARLBOROUGH—			
Havelock	6	652 2 19	82 5 6
Blenheim	16	865 0 5	267 12 6
NELSON—			
Collingwood	6	938 3 4	234 15 0
Inangahua	105	5,355 0 2	1,076 1 0
Charleston	35	1,031 1 37	122 18 10
Ahaura	..	..	..
Lyell	38	1,258 2 31	343 2 6
Murchison	38	1,148 3 23	305 7 6
Westport	34	1,346 2 1	404 5 0
Motueka	..	..	..
WESTLAND—			
Hokitika and Kanieri	61	1,655 2 1	330 2 6
Kumara	51	699 1 38	227 4 0
Greymouth	93	3,946 0 0	613 3 6
Ross	38	1,866 0 0	481 17 6
Okarito	16	886 0 0	154 16 6
OTAGO AND SOUTHLAND—			
Cromwell	16	418 3 6	335 13 7
Wyndham	5	99 0 0	34 7 6
Black's			
Clyde and Alexandra	130	4,977 0 0	1,606 2 6
Roxburgh			
Naseby	137	1,846 0 33	491 4 3
Arrow (Wakatipu Goldfield) ..	544	2,122 3 1	203 2 6
Queenstown	541	3,315 1 22	463 4 6
Riverton and Orepuki	44	2,137 0 0	72 11 6
Totals	2,343	55,799 3 22	11,905 17 8

STATEMENT of AFFAIRS of MINING COMPANIES, as published in accordance with the Mining Companies Acts, 1891, 1894, and 1900

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 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.	Amount of Debts owing by Company.
										Quantity.	Value.			
AUCKLAND DISTRICT.														
		£	£	£		£ s. d.	£			Oz.	£	£	£	£
Arrindell Syndicate (Ltd.)	30/6/03	6,000	..	..	18,000	..	..	16	7	..	..	1,300	..	50
Big Beetle Gold-mining Co. (No Liability)	31/7/01	5,000	2,077	250	100,000	0 0 5½	..	89	9	503	1,507	2,923	..	17
Broken Hill Gold-mining Co. (Ltd.)	16/1/95	14,250	3,554	..	95,000	0 0 9¾	112	121	..	..	..	3,965	..	71
Bunker's Hill Gold-mining Co. (Ltd.)	21/6/95	18,000	11,000	6,000	80,000	5/ & 3/	10	315	5	4,820	14,688	24,327	1,303	15
Coromandel Freehold Proprietary Gold-mining Co. (No Liability)	11/11/95	18,750	10,312	..	150,000	0 0 0½	..	172	..	..	..	11,335	..	115
Eclipse (Ltd.)	19/11/98	7,500	6,750	750	150,000	0 1 0	..	11	..	..	15,393	23,014	625	..
Golden Belt Gold-mining Co. (Ltd.)	12/8/02	16,000	4,976	5,250	160,000	Various	909	65	12	..	..	3,462	..	22
Golden Spark Gold-mining Co. (Ltd.)	17/11/03	2,000	..	..	80,000	..	..	44	5	..	..	117	..	..
Harbour View Gold-mining Co. (No Liability)	15/4/03	1,925	642	..	77,000	0 0 2	..	87	8	185	483	1,260	..	618
Hauraki Freeholds (Ltd.)	25/1/99	20,000	1,275	..	400,000	0 0 9	..	375	10	..	1,999	1,325	..	66
Hauraki No. 2 Gold-mining Co. (No Liability)	10/7/95	12,000	7,151	1,818	80,000	0 2 6	..	16	2	..	27	7,460	..	6
Kuranui Gold-mining Co. (Ltd.)	12/9/95	15,000	6,369	..	60,000	0 2 3	165	67	7	..	767	6,846	..	368
Mahara Royal Gold-mining Co. (Ltd.)	9/4/03	5,132	1,513	1,500	102,637	1/ & 5d.	..	188	20	749	2,273	5,328	..	1,949
May Queen Extended Gold-mining Co. (No Liability)	12/11/95	15,000	6,688	..	95,000	0 1 7⅘	..	108	6	..	1,423	8,124	..	348
New Eclipse Gold-mining Co. (Ltd.)	9/9/03	10,000	2,717	5,000	100,000	6d. & 7d.	200	83	6	..	..	2,549	..	104
New Four-in-hand Gold-mining Co. (Ltd.)	30/6/98	24,567	789	22,500	131,347	5/ & 3¾d.	65	160	6	5,989	17,445	16,445	4,500	15
New Una Gold-mining Co. (Ltd.)	10/9/03	3,901	485	125	52,010	3d. & 1/0½	41	93	5	..	..	266	..	6
Old Alburnia Gold-mining Co. (Ltd.)	25/7/03	11,000	2,524	..	110,000	0 0 5½	226	123	14	..	..	2,487	..	1,100
Old Hauraki Gold-mining Co. (Ltd.)	31/3/03	12,500	..	8,000	100,000	..	..	80	30	1,352	4,136	7,896	1,250	231
Pride of Waihi Gold-mining Co. (Ltd.)	15/1/01	50,000	1,250	1,250	100,000	0 0 6	..	163	2	..	..	1,134	..	27
Puru Consolidated Gold-mining Co. (Ltd.)	17/7/97	24,563	..	7,915	65,500	0 5 6	956	132	4	..	1,547	11,339	..	55
Rising Sun Gold-mining Co. (No Liability)	16/10/95	18,000	..	1,900	89,484	0 1 2 3/10	..	..	2	..	..	4,206	..	31
Sunbeam Gold- and Silver-mining Co. (Ltd.)	30/6/99	7,039	1,316	2,500	93,850	0 1 0	..	71	2	..	..	1,443	..	290
Tairua Broken Hills Gold-mining Co. (Ltd.)	12/7/99	14,550	14,550	..	145,500	0 2 0	..	141	60	25,753	48,015	41,441	19,254	336
Thames Talisman Gold-mining Co. (Ltd.)	28/6/00	2,900	1,883	..	58,000	0 0 8	45	23	5	..	..	2,489	..	75
Victoria Gold-mining Co. (No Liability)	2/9/90	25,600	16,260	1,600	128,000	0 3 3½	252	143	10	..	13,110	26,783	..	..
Waihi Beach United Gold-mining Co. (No Liability)	12/10/98	6,529	..	3,265	130,587	0 0 6	..	113	7	..	..	3,173	..	92
Waihi Consolidated (Ltd.)	23/3/00	25,000	1,042	15,000	100,000	0 3 2½	..	161	6	..	..	1,928	..	..
Waihi Consols Gold-mining Co. (Ltd.)	27/5/03	12,500	1,122	2,500	100,000	3d.,2d.,1d.	112	79	4	..	..	572	..	1
Waihi Extended Gold-mining Co. (Ltd.)	12/8/95	149,967	15,407	5,498	149,967	0 2 9½	28	396	10	..	..	15,764	..	115
Waihi South Gold-mining Co. (Ltd.)	13/6/95	19,800	11,348	7,350	132,000	0 2 10	3	185	6	..	..	12,817	..	69
Waihui Gold-mining Co. (No Liability)	7/12/00	2,250	1,542	..	60,000	0 7 0	27	50	6	..	..	1,492	..	8
Waiotahi Gold-mining Co. (Ltd.)	1/8/71	18,000	15,000	..	6,000	2 10 0	..	47	17	..	189,715	154,177	40,200	33
White Star Gold-mining Co. (No Liability)	13/12/03	2,500	208	..	50,000	0 0 4	22	47	..	4	11	695	..	3
Totals	..	597,723	149,750	99,971	3,550,382	..	3,173	3,964	293	39,355	312,539	409,882	67,132	6,236

STATEMENT of AFFAIRS of MINING COMPANIES, as published in accordance with the Mining Companies Acts, 1891, 1894, and 1900—*continued*.

Name of Company.	Date of Registration.	Subscribed Capital.	Amount of Capital actually paid up.	Value of Scrip given to Shareholders on which no Cash paid.	Number of Shares allotted.	Amount paid up per Share.	Arrears of Calls.	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.	Amount of Debts owing by Company.
										Quantity.	Value.			
NELSON DISTRICT (INCLUDING WEST COAST)														
		£	£	£		£ s. d.				Oz.	£	£	£	£
A1 Gold-dredging Co. (Ltd.)	13/11/99	8,500	6,700	1,800	8,500	1 0 0	..	120	9	2,798	10,862	15,247	2,125	Nil.
Addison's Long Tunnel Gold-mining Co. (Ltd.)	24/9/98	1,457	1,362	83	1,457	Various	12	24	4	1,186	4,680	5,973	177	402
Aldinga Gold-dredging Co. (Ltd.)	23/5/00	6,750	6,750	2,250	9,000	1 0 0	..	185	10	1,463	5,746	13,859	..	1,829
Alpine Extended Gold-mining Co. (Ltd.)	25/8/97	25,000	9,377	..	50,000	0 3 11	414	171	27	9,576	37,016	49,606	..	1,454
Amikitea Gold-dredging Co. (Ltd)	20/3/01	12,500	8,411	2,500	12,500	0 18 0	589	104	..	646	2,517	12,833	..	2,278
Atlas Prospecting and Gold-mining Co. (Ltd.)	4/8/02	21,000	394	..	21,000	0 0 4½	..	19	..	..	..	399	..	9
Belle Vue Gold-dredging Co. (Ltd.)	17/10/02	3,400	3,160	1,000	3,400	0 18 0	108	12	..	..	..	249	..	..
Bignell's No Town Gold-dredging Co. (Ltd.)	10/4/00	9,000	4,840	4,160	9,000	1 0 0	..	96	8	..	..	4,983	..	547
Big River Gold-mining Co. (Ltd.)	11/4/91	12,000	8,845	..	24,000	0 7 6	..	64	20	24,073	96,773	61,495	47,366	59
Blackwater River Gold-dredging Co. (Ltd.)	27/4/00	9,475	8,892	3,000	9,475	0 18 0	..	114	9	1,281	5,195	13,496	1,421	..
Boatman's Creek Gold-dredging Co. (Ltd.)	28/8/02	13,180	6,100	7,060	13,180	Various	20	71	10	226	900	7,490	..	610
Britannia Gold-mining Co. (Ltd.)	3/3/99	10,000	1,934	..	20,000	0 7 1¾	..	19	..	1,648	6,431	6,017	2,258	..
Buller Junction Gold-dredging Co. (Ltd.)	8/6/99	8,125	8,125	1,250	12,500	0 15 0	..	134	9	3,809	14,865	18,932	3,438	310
Callaghan's Creek Gold-dredging Co. (Ltd.)	25/5/00	7,500	5,750	1,875	12,500	0 11 6	..	75	7	1,820	7,225	11,265	1,250	126
Charleston Beach Sluicing Co. (Ltd.)	18/4/03	6,000	4,938	..	12,000	10/ 7/6 & 5/	1,063	16	6	..	..	4,753	..	3,020
Cornwall Gold-dredging Co. (Ltd.)	18/6/00	9,800	9,765	1,200	11,000	1 0 0	..	108	8	1,331	5,125	14,851	..	298
Craig's Freehold Gold-dredging Co. (Ltd.)	20/8/00	6,500	4,071	2,500	9,000	0 14 0	464	116	12	978	700	4,862	..	1,972
Daylight Gold-dredging Co. (Ltd.)	15/5/00	6,000	4,243	2,000	8,000	1 0 0	177	66	..	..	..	3,707	..	..
Feddersen Gold-dredging Co. (Ltd.)	5/3/01	11,000	9,000	2,000	11,000	1 0 0	..	86	2	477	1,825	10,884	..	319
Fourteen Mile Beach Gold-dredging Co. (Ltd.)	25/10/98	22,000	19,400	2,600	22,000	1 0 0	..	376	1	802	3,089	24,787	..	1,595
Garden Gully Gold-mining Co. (Ltd.)	8/8/01	1,483	1,286	8,518	10,000	Various	89	64	5	4	16	1,300	..	9
Glenroy Gold-dredging Co. (Ltd.)	4/7/02	2,250	1,073	850	3,100	0 10 0	200	19	1	..	..	1,085	..	30
Golden Bay Gold-dredging Co. (Ltd.)	13/3/01	17,930	11,157	5,500	17,030	1 0 0	67	275	1	15	56	11,257	..	160
Golden United Dredging Co. (Ltd.)	7/4/00	6,500	5,503	7,500	14,000	1 0 0	309	123	8	287	1,090	6,592	..	519
Greenstone Creek Gold-dredging Co. (Ltd)	10/10/99	9,000	8,976	2,000	10,976	1 0 0	..	160	7	1,700	6,706	16,376	..	354
Greenstone Junction Gold-dredging Co. (Ltd.	22/9/99	7,500	7,500	1,500	12,000	0 15 0	..	129	9	2,390	9,262	17,333	..	1,113
Greenstone Sluicing Co. (Ltd.)	22/1/89	7,000	2,702	2,300	7,000	0 11 6	..	29	..	4,036	15,868	15,011	1,925	20
Hokitika River Gold-dredging Co. (Ltd.)	31/8/99	12,950	12,950	3,000	13,000	1 0 0	..	232	..	999	4,061	13,804	..	1,120
Keep-it-Dark Quartz-mining Co. (Ltd.)	2/3/74	20,000	6,208	10,000	20,000	0 16 2½	..	53	57	88,283	340,410	368,340	132,167	65
Kells' Sluicing Co. (Ltd.)	7/4/02	2,475	2,475	1,250	3,725	1 0 0	..	17	4	14	50	2,914	..	389
Kirwan's Reward Gold-mining Co. (Ltd.)	8/3/98	56,000	3,092	..	56,000	0 1 1¼	..	84	31	8,502	34,036	22,640	14,000	110
Kohikohi Gold-dredging Co. (Ltd.)	27/5/00	14,667	11,265	2,500	14,667	20/ & 13/	121	114	16	1,222	4,696	17,513	..	1,887
Kohinoor Gold-dredging Co. (Ltd.)	15/2/00	14,975	12,474	2,500	15,000	1 0 0	1	170	8	2,062	8,090	20,122	500	409
Macleod's Terrace Sluicing and Water-distributing Co. (Ltd.)	4/4/03	12,000	2,760	..	12,000	1 0 0	750	27	6	..	..	1,022	..	..
Minerva Gold-mining Co. (Ltd.)	24/2/90	12,000	6,428	400	17,285	0 6 3	..	18	1	821	2,947	11,080	..	9
Mokoia Gold-dredging Co. (Ltd.)	21/4/99	9,000	7,750	1,250	9,000	1 0 0	..	219	8	3,746	14,158	19,228	1,925	561
Mont d'Or Gold-mining and Water-race Co. (Ltd.)	25/7/82	12,000	10,800	..	12,000	0 18 0	..	30	18	27,862	106,558	80,539	38,400	750
Montezuma Gold-dredging Co. (Ltd.)	27/8/02	3,800	3,800	1,200	5,000	1 0 0	..	56	10	99	387	5,005	..	1,364
Montgomery's Terrace Hydraulic Sluicing Co. (Ltd.)	28/9/00	17,500	11,714	5,500	22,900	20/ & 1/	10	149	6	223	878	17,745	..	754
Moonlight Gold-dredging Co. (Ltd.)	7/5/00	7,750	7,574	2,250	9,783	1 0 0	27	108	8	237	936	10,199	..	1,697
Mosquito Gold-dredging Co. (Ltd.)	24/4/00	10,000	7,800	2,200	10,000	1 0 0	..	99	11	2,876	11,197	18,141	1,500	799
Mosquito No. 2 Gold dredging Co. (Ltd.)	24/4/01	8,000	5,600	3,000	11,000	0 14 0	..	16	9	390	1,495	9,281	..	2,671
Nelson Creek Gold-dredging Co. (Ltd.)	1/7/99	6,000	6,000	2,500	8,500	1 0 0	..	79	14	8,228	32,283	32,831	15,880	423
New Commissioners' Flat Gold-dredging Co. (Ltd.)	8/6/03	2,000	2,000	..	2,000	1 0 0	..	26	8	399	1,603	1,807	..	386
New Fairdown Gold-dredging Co. (Ltd.)	17/11/03	1,618	1,288	1,830	6,139	1 0 0	..	109	..	177	703	2,130	..	692
New Scotia Gold-mining Co. (Ltd.)	22/5/00	1,200	6,200	3,000	24,000	0 7 4½	39	99	4	1,287	4,102	10,877	..	515

STATEMENT of AFFAIRS of MINING COMPANIES, as published in accordance with the Mining Companies Acts, 1891, 1894, and 1900—*continued*.

Name of Company.	Date of Registration.	Subscribed Capital.	Amount of Capital actually paid up.	Value of Scrip given to Shareholders on which no Cash paid.	Number of Shares allotted.	Amount paid up per Share.	Arrears of Calls.	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.	Amount of Debts owing by Company.
										Quantity.	Value.			
NELSON DISTRICT (INCLUDING WEST COAST)—*continued*.														
		£	£	£		£ s. d.	£			Oz.	£	£		£
Newton River Hydraulic Sluicing Co. (Ltd.) ..	19/12/02	14,115	3,515	10,556	14,115	20/ & 10/	44	7	14	647	2,480	5,202	..	166
New Woodstock Dredging Co. (Ltd.)	25/7/03	2,000	1,918	..	2,000	1 0 0	82	18	9	86	334	1,838	..	299
North Beach Gold-dredging Co. (Ltd)	27/2/00	6,225	6,225	2,100	8,325	1 0 0	..	97	8	3,174	12,334	16,450	2,914	
No Town Creek Gold-dredging Co. (Ltd.) ..	9/3/00	8,500	8,500	3,500	12,000	1 0 0	..	134	10	4,941	19,259	19,134	8,677	421
Pactolus Gold-dredging Co. (Ltd.)	30/8/99	8,125	8,125	1,250	12,500	1 15 0	..	107	20	6,403	25,289	30,224	2,500	652
Parapara Hydraulic Sluicing and Mining Co. (Ltd.)	18/6/92	50,600	26,360	20,000	40,600	Various	150	61	20	6,403	24,554	51,634	..	265
Premier (Buller) Gold-dredging Co. (Ltd.) ..	9/3/00	10,585	8,654	1,500	10,585	Various	89	140	9	1,496	5,882	15,724	262	1,236
Prince of Wales Dredging Co. (Ltd.)	17/10/99	10,000	9,900	4,000	14,000	1 0 0	101	94	8	1,298	5,062	15,376	..	330
Reeves's Proprietary Gold dredging Co. (Ltd.) ..	19/10/99	12,200	9,700	2,500	12,200	1 0 0	..	236	8	2,363	9,271	23,856	..	3,350
Rocklands Beach Gold-dredging Co. (Ltd.) ..	1/9/99	11,672	9,872	1,800	11,672	1 0 0	..	125	8	1,411	5,538	16,288	..	955
Shetland Terrace Sluicing Co. (Ltd.)	18/6/01	8,025	5,806	2,050	8,025	20/ & 1/	..	118	10	..	..	6,369	..	435
Slate River Sluicing Co. (Ltd.)	26/7/00	14,680	14,647	1,200	13,480	1 0 0	33	85	7	549	..	14,706	..	
Stafford-Waimea Gold-dredging Co. (Ltd.) ..	14/5/00	7,000	6,878	2,000	9,000	1 0 0	..	80	7	875	3,488	9,299	..	1,890
Stoney and Mosquito Leads Gold-mining and Dredging Co. (Ltd.)	..	12,000	5,499	6,000	12,000	1 0 0	303	43	11	924	3,578	9,264	..	611
Sullivan's Lead Gold-dredging Co. (Ltd.) ..	8/5/00	11,500	8,611	2,650	13,500	1 0 0	2,229	131	..	46	179	8,429	..	596
Takaka Sluicing Co. (Ltd.)	28/1/01	5,395	5,395	3,725	9,120	1 0 0	..	47	11	1,712	6,415	11,824	2,280	81
Three-mile (Greenstone Creek) Dredging Co. (Ltd.)	15/9/99	6,500	6,500	1,500	8,000	1 0 0	..	104	10	2,552	9,880	15,953	400	87
Totara Flat Gold-dredging Co. (Ltd.)	21/2/03	5,007	583	2,411	5,007	0 18 0	130	52	11	498	1,930	2,166	..	2,223
Wanganui-Wataroa Gold-dredging Co. (Ltd.) ..	22/6/01	6,975	..	2,000	6,975	1 0 0	295	123	1	10	40	7,566	..	1,185
Wangapeka Gold-dredging Co. (Ltd.)	19/9/00	15,000	10,042	6,000	21,000	0 14 0	304	221	6	18	..	11,422	..	655
Watterson's-Ahaura Dredging Co. (Ltd.) ..	18/8/02	3,305	3,191	..	4,446	20/ & 5/	113	150	8	385	1,490	5,000	..	225
Welcome Gold-dredging Co. (Ltd.)	3/5/00	9,900	9,747	2,750	9,900	1 0 0	..	120	10	1,730	6,827	16,933	..	1,170
Westland Water-supply, Electric Power, and Gold-dredging Co. (Ltd.)	8/10/00	3,836	3,003	12,000	15,611	0 16 0	67	31	1	..	..	4,103	..	
Totals	..	727,032	471,103	197,318	899,678	..	8,400	6,809	599	245,494	948,367	1,338,620	281,365	48,466
OTAGO DISTRICT (INCLUDING SOUTHLAND).														
Alexandra Bonanza Gold-dredging and Sluicing Co. (Ltd.)	5/9/99	27,000	16,954	3,000	21,393	1 0 0	462	140	6	..	854	18,945	..	327
Alexandra Eureka Gold-dredging Co. (Ltd.) ..	14/11/99	12,000	..	12,000	12,000	1 0 0	..	24	14	5,200	20,309	13,055	7,350	70
Alexandra Lead Gold-dredging Co. (Ltd.) ..	26/7/99	17,521	14,521	3,000	17,521	1 0 0	..	209	9	5,935	22,981	21,390	14,032	1,045
Alpine No. 2 Gold-dredging Co. (Ltd.)	1/5/99	6,220	6,220	825	6,220	1 0 0	..	123	1	2,373	9,175	10,659	3,416	71
Arrow Falls Gold-mining Co. (Ltd.)	4/4/98	30,000	2,125	27,750	30,000	20/ & 19/9	..	33	11	1,164	4,497	7,336	..	229
Bakery Flat Sluicing Co. (Ltd.)	10/9/96	2,500	1,888	300	2,500	0 17 6	..	28	..	2,347	8,876	9,869	1,063	414
Barewood Gold-mining Co. (Ltd.)	24/12/03	8,000	7,000	6,000	8,000	0 10 0	..	41	20	1,792	6,927	5,604	2,800	357
Blue Spur and Gabriel's Gully Consolidated Gold Co. (Ltd.)	1/2/88	91,266	37,622	60,000	91,266	1 0 0	..	..	30	40,583	159,480	27,910	28,721	300
Cairntrodlie Gold-dredging Co. (Ltd.)	27/3/00	4,000	2,341	2,000	6,000	0 13 0	..	51	7	753	2,978	5,554	286	187
Central Charlton Dredging Co. (Ltd.)	8/12/99	5,300	5,300	1,700	7,000	1 0 0	..	111	8	2,617	10,177	14,697	1,050	..
Central Mataura Gold-dredging Co. (Ltd.) ..	30/6/00	27,000	11,114	7,000	27,000	Various	550	225	8	2,080	7,699	22,132	..	1,508

STATEMENT of AFFAIRS of MINING COMPANIES, as published in accordance with the Mining Companies Acts, 1891, 1894, and 1900—*continued*.

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										Quantity.	Value.			
OTAGO DISTRICT—*continued*.														
		£	£	£	£	£ s. d.				Oz.	£	£	£	£
Champion Gold-mining Co. (Ltd.)	30/12/98	10,000	4,382	..	10,000	0 10 0	18	65	15	2,075	7,935	13,534	500	639
Charlton Creek Gold-dredging Co. (Ltd.) ..	5/5/99	4,000	4,000	1,000	5,000	1 0 0	..	79	9	3,958	15,314	18,375	3,869	36
Chicago Gold-dredging Co. (Ltd.)	1/11/99	2,500	6,750	2,500	5,000	2 10 0	..	62	7	3,459	13,495	10,453	746	232
Clyde Dredging Co. (Ltd.)	17/5/95	6,000	5,850	150	6,000	1 0 0	..	81	8	11,213	43,183	31,121	19,550	185
Crewe Gold-dredging Co (Ltd.)	7/9/02	2,500	1,515	3,000	5,600	0 16 0	85	14	7	672	2,585	3,348	..	211
Cromwell Gold-dredging Co. (Ltd.)	10/10/98	5,300	5,300	1,700	7,000	1 0 0	..	147	16	8,889	34,324	21,986	16,625	318
Davis Bend Dredging Co. (Ltd.)	1/5/00	11,000	4,440	2,500	11,000	Various	753	159	2	1,024	3,905	9,713	..	1,552
Deep Stream Amalgamated Hydraulic Sluicing Co. (Ltd.)	4/2/97	8,500	8,500	3,500	12,000	1 0 0	..	57	15	5,444	20,971	28,747	7,447	186
Doctor's Creek Gold-dredging Co. (Ltd.) ..	11/2/01	60	30	..	602	0 1 0	30	8	..	..	..	30	..	12
Dunstan Lead Gold-dredging Co. (Ltd.) ..	31/5/99	17,500	14,489	3,000	17,500	Various	..	206	9	3,425	13,268	24,413	2,622	224
Earnscleugh Gold-dredging Co. (Ltd.)	15/7/01	8	8	10,992	11,000	1 0 0	..	9	27	10,299	39,888	25,141	13,750	320
Electric Gold-dredging Co. (Ltd.)	2/9/99	26,000	..	26,000	26,000	1 0 0	..	281	18	21,317	83,123	24,920	57,193	907
Empire Gold-dredging Co. (Ltd.)	13/7/97	5,000	5,000	..	5,000	1 0 0	..	40	15	9,199	35,678	28,775	12,010	355
Enfield Gold-dredging Co. (Ltd.)	31/10/99	5,000	5,000	2,000	7,000	1 0 0	..	62	7	2,207	8,902	12,868	900	87
Enterprise Gold-dredging Co. (Ltd.)	24/8/91	7,000	3,500	3,500	7,000	1 0 0	..	145	14	14,790	57,277	37,655	20,862	282
Enterprise Water-race Co. (Reg.)	7/2/67	4,800	4,800	..	16	300 0 0	..	7	3	7,320	27,867	28,517	13,581	250
Ettrick Gold Steam-dredging Co. (Ltd.) ..	29/8/90	9,000	8,366	2,000	10,500	1 0 0	..	110	7	6,888	26,510	31,367	3,673	120
First Chance Gold-dredging Co. (Ltd.)	23/6/02	3,500	3,500	3,500	7,000	1 0 0	..	153	2	1,757	6,801	6,788	3,138	88
Gabriel Gold-dredging Co. (Ltd.)	12/6/00	3,350	2,315	2,150	4,590	1 0 0	..	56	7	2,253	8,704	11,017	444	74
Garden Gully Dredging Co. (Ltd.)	14/8/03	2,250	2,002	..	2,250	1 0 0	248	25	..	..	..	1,474	..	..
Golden Bed Dredging Co. (Ltd.)	5/5/99	11,000	10,694	2,000	12,794	1 0 0	31	210	8	2,857	11,145	13,699	..	308
Golden Crescent Sluicing Co. (Ltd.)	26/11/98	3,500	3,500	..	3,500	1 0 0	..	28	7	2,611	10,119	9,455	4,200	36
Golden Gate Dredging Co. (Ltd.)	13/3/95	2,500	2,500	..	2,500	1 0 0	..	51	7	11,493	44,260	23,580	22,000	90
Golden Horseshoe Dredging Co. (Ltd.) ..	16/1/00	10,000	6,963	2,000	10,000	1 0 0	..	119	..	..	..	8,213	..	212
Golden Lion Mining Co. (Ltd.)	28/10/01	3,000	2,991	..	3,000	1 0 0	..	42	16	268	958	5,071	..	514
Golden River Gold-dredging Co. (Ltd.)	7/8/99	10,000	9,064	1,600	40,000	0 5 0	..	332	1	982	3,792	11,715	1,000	740
Golden Run Dredging Co. (Ltd.)	29/6/91	9,000	9,414	1,600	11,000	1 0 0	..	150	8	11,830	45,543	49,710	5,744	262
Golden Treasure Dredging Co. (Ltd.)	11/7/93	1,500	1,384	1,500	3,000	1 0 0	..	43	7	9,719	37,419	26,276	14,596	545
Gordon Gold-dredging Co. (Ltd.)	27/2/03	14	14	1,000	1,014	1 0 0	..	7	7	362	1,428	1,722	..	339
Happy Valley Gold-dredging Co. (Ltd.) ..	24/2/00	5,050	4,667	2,450	7,500	1 0 0	8	89	7	2,095	8,000	11,725	702	..
Hartley and Riley Beach Dredging Co. (Ltd.) ..	14/7/97	6,500	6,300	200	6,500	1 0 0	..	347	9	25,724	99,536	24,419	78,000	555
Hessey's Gold-dredging Co. (Ltd.)	22/7/02	3,700	3,700	1,300	5,000	1 0 0	..	77	8	647	2,533	5,712	750	..
Inchdale Gold-dredging Co. (Ltd.)	8/2/00	5,500	5,023	1,500	7,000	1 0 0	..	86	7	1,960	7,400	9,890	321	129
Inch Valley Gold-dredging Co. (Ltd.)	15/9/98	5,000	2,600	2,400	5,000	1 0 0	..	70	7	3,281	12,584	11,961	2,500	100
Island Block Gold-dredging Co. (Ltd.)	26/2/00	24,030	11,991	12,000	25,000	1 0 0	39	83	20	2,944	11,425	18,179	..	1,211
Junction Electric Gold-dredging Co. (Ltd.) ..	2/9/99	26,000	..	26,000	26,000	1 0 0	..	322	10	11,744	45,439	27,177	18,850	432
Junction Waikaka Gold-dredging Co. (Ltd.) ..	10/10/00	5,100	4,140	1,900	7,100	1 0 0	960	42	..	..	27	4,038	..	960
Jutland Hydraulic Dredging Co. (No Liability) ..	13/6/01	4,100	4,100	900	5,000	1 0 0	..	8	8	762	2,860	8,602	..	712
Kia Ora Victoria Gold-dredging Co. (Ltd.) ..	10/8/01	9,100	5,915	..	9,100	0 13 0	..	34	16	3,515	14,242	16,522	2,957	..
Lady Roxburgh Gold-dredging Co. (Ltd.) ..	3/3/00	9,000	4,561	2,000	9,000	0 10 0	3	88	8	787	3,026	6,943	..	160
Ladysmith Gold-dredging Co. (Ltd.)	19/4/00	12,000	3,962	3,000	14,500	0 10 0	..	87	8	1,265	4,871	8,603	495	127
Last Chance Hydraulic Sluicing, Elevating, and Dredging Co. (Ltd.)	27/7/99	9,950	4,655	3,300	9,950	0 14 0	..	103	11	1,297	3,650	6,366	498	..
Lawrence Gold-dredging Co. (Ltd.)	11/10/99	1,500	450	1,050	1,500	1 0 0	..	21	7	2,302	8,859	7,392	1,350	180
Livingstone Creek Gold-dredging Co. (Ltd.) ..	22/12/02	3,500	3,456	..	3,500	1 0 0	4	28	8	300	1,108	5,082	..	..

STATEMENT of AFFAIRS of MINING COMPANIES, as published in accordance with the Mining Companies Acts, 1891, 1894, and 1900—*continued*.

Name of Company.	Date of Registration.	Subscribed Capital.	Amount of Capital actually paid up.	Value of Scrip given to Shareholders on which no Cash paid.	Number of Shares allotted.	Amount paid up per Share.	Arrears of Calls.	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.	Amount of Debts owing by Company.
										Quantity.	Value.			
OTAGO DISTRICT—*continued*.														
		£	£	£		£ s. d.	£			Oz.	£	£	£	£
Local Industry Gold-mining Co. (Ltd.) ..	21/10/91	1,500	1,300	..	1,500	0 17 4	..	13	4	3,800	14,627	14,286	2,138	..
Loch Lomond Gold-dredging Co. (Ltd.) ..	20/2/03	2,455	1,773	500	2,455	Various	183	67	2	..	..	1,782	..	178
Lone Star Gold-dredging Co. (Ltd.)	15/3/02	720	600	..	720	0 16 8	..	15	10	1,083	4,218	8,603	495	179
Lower Enfield Gold-dredging Co. (Ltd.)	5/3/00	6,000	5,732	1,500	7,500	1 0 0	..	112	7	324	1,216	7,877	..	973
MacCharlton Gold-dredging Co (Ltd)	3/12/00	6,000	2,911	1,000	7,000	Various	26	37	8	1,063	4,104	8,603	..	1,548
Matakanui Gold mining Co. (Ltd.)	22/1/02	7,000	7,000	7,000	7,000	1 0 0	..	8	7	870	3,279	3,038	175	900
Manorburn Gold-dredging Co. (Ltd.)	28/1/96	3,000	3,000	..	3,000	1 0 0	..	7	..	3,634	14,497	16,343	2,250	632
Manuherikia Gold-dredging Co. (Ltd.).. ..	1/8/99	6,000	6,000	6,000	12,000	1 0 0	..	182	8	9,046	34,546	19,254	20,400	90
Maori Point Gold-dredging Co (Ltd.)	2/9/01	3,200	3,200	1,300	3,200	1 0 0	..	48	7	1,385	5,311	9,660	450	385
Majestic Gold-dredging Co. (Ltd.)	31/7/99	6,500	5,700	800	6,500	1 0 0	..	102	7	2,415	9,335	13,706	1,300	206
Matau Dredging Co. (Ltd.)	16/10/97	6,200	6,200	800	7,000	1 0 0	..	123	7	7,887	30,409	19,911	14,875	98
Molyneux Falls Gold-dredging Co. (Ltd.) ..	12/2/03	3,540	1,218	2,302	3,540	£1 & 5s.	20	19	1	12	45	1,192	..	1,200
Molyneux Hydraulic Dredging Co. (Ltd.) ..	25/5/00	5,896	5,896	..	5,896	1 0 0	..	91	7	7,112	26,916	32,909	5,602	310
Molyneux Kohinoor Dredging Co. (Ltd.) ..	27/1/00	7,325	5,059	495	9,130	£1 & 13/6	..	172	8	1,518	5,871	8,483	1,370	157
Monte Christo Dredging Co (Ltd.)	7/6/99	8,500	8,500	1,100	9,600	1 0 0	..	171	3	1,573	5,981	12,617	1,920	378
Mount Buster Mining Co. (Ltd.)	20/4/96	6,480	..	4,320	216	20 0 0	..	13	4	2,218	8,540	3,346	5,292	215
Mount Morgan Sluicing Co. (Ltd.)	..	800	800	2,000	2,800	1 0 0	..	8	4	168	646	2,060	..	224
Muddy Creek Sluicing Co. (Ltd.)	16/7/00	4,512	4,512	1,000	5,512	1 0 0	..	107	7	2,225	8,704	11,315	1,378	..
Mystery Flat Gold-dredging Co. (Ltd.) ..	2/11/01	1,120	1,120	725	1,845	1 0 0	..	26	9	1,909	7,445	7,359	738	137
Naseby Dredging and Hydraulic Sluicing Co. (Limited)	16/10/97	5,000	2,288	2,000	5,000	0 15 3	..	24	6	2,967	11,471	13,055	2,500	219
New Alpine Consols Dredging Co. (Ltd.) ..	3/7/02	3,098	3,098	..	6,195	0 10 0	..	98	7	828	3,118	5,528	927	152
New Bendigo Gold-dredging Co. (Ltd.) ..	3/2/03	6,500	4,400	2,200	6,600	1 0 0	..	181	1	351	1,363	5,138	..	..
New Golden Beach Hydraulic Elevating and Dredging Co. (Ltd.)	12/12/02	3,000	2,470	..	3,000	1 0 0	56	55	9	52	..	2,591	..	3,075
New Half-way House Gold-dredging Co. (Ltd.) ..	25/11/01	4,000	4,000	4,000	8,000	1 0 0	..	162	5	978	3,790	3,034	800	133
New Paul's Beach Dredging Co. (Ltd.) ..	14/11/02	900	900	100	1,000	1 0 0	..	11	7	556	2,167	2,912	100	334
New Prince Arthur Gold-dredging Co. (Ltd.) ..	4/9/03	2,306	923	..	9,225	0 2 0	..	121	7	..	..	825	..	1,453
New Roxburgh Jubilee Dredging Co. (Ltd.) ..	22/1/02	2,500	2,500	5,000	7,500	0 12 6	..	169	7	3,340	12,970	7,200	7,491	..
New Royal Maori Gold-dredging Co. (Ltd. ..	4/8/02	3,738	1,806	..	7,268	1 0 0	..	73	..	519	2,017	3,756	..	..
New Skipper's Sluicing Co. (Ltd.)	16/9/02	3,414	811	811	3,414	1 0 0	..	24	6	208	797	3,175	..	165
New Teviot Gold-dredging Co. (Ltd.)	19/12/02	..	..	3,500	3,500	1 0 0	..	162	8	654	2,541	2,917	..	1,052
Ngapara No. 3 Gold-dredging Co. (Ltd.) ..	13/9/99	5,000	5,000	2,000	7,000	1 0 0	..	78	7	1,686	5,989	10,985	350	140
Nokomai Hydraulic Sluicing Co. (Ltd.) ..	26/3/98	24,000	7,000	17,000	2,400	10 0 0	..	40	38	9,003	34,428	28,402	12,684	425
Nugent Wood Gold-dredging Co. (Ltd.) ..	24/11/02	3,000	2,450	550	3,000	1 0 0	..	38	8	218	840	3,118	..	444
O'Brien's Patent Hydraulic Gold-dredging Co. (Ltd.)	18/3/00	750	750	250	1,000	1 0 0	..	7	..	148	568	2,057	200	..
Oceanic Steam Gold-dredging Co. (Ltd.) ..	5/3/00	5,000	4,433	1,600	7,000	1 0 0	..	91	7	202	780	5,606	..	506
Olrig Dredging Co. (Ltd.)	13/3/99	7,000	6,000	1,000	7,000	1 0 0	..	83	8	3,424	13,345	15,833	2,782	150
Otago Gold-dredging Co. (Ltd.)	20/5/95	5,000	2,000	3,000	5,000	1 0 0	..	74	13	7,634	31,257	26,980	6,000	1,087
Ourawera Gold-mining Co. (Ltd.)	23/5/95	3,000	3,000	..	3,000	1 0 0	..	18	11	5,398	21,337	19,238	5,215	..
Paterson's Freehold Gold-mining Co. (Ltd.) ..	15/7/99	8,000	5,730	4,000	12,000	0 14 6	70	29	16	..	13,179	19,202	1,500	5,168
Perseverance Gold-dredging Co. (Ltd.) ..	19/4/99	14,000	14,000	6,000	14,000	20/and 50/	..	135	18	10,875	42,101	40,352	16,100	541
Phœnix Dredging Co. (Ltd.)	27/9/02	1,500	1,500	..	30	50 0 0	..	15	7	1,118	4,473	5,615	2,025	135
Phœnix Water-race Co. (Registered)	12/10/67	1,500	1,500	..	1,000	1 10 0	..	18	..	..	..	..	7,237	..
Point d'Or Gold-dredging Co. (Ltd.)	26/3/00	10,575	3,098	2,200	10,575	0 9 0	446	145	..	565	2,172	4,756	..	181

STATEMENT of AFFAIRS of MINING COMPANIES, as published in accordance with the Mining Companies Acts, 1891, 1894, and 1900—*continued*.

Name of Company.	Date of Registration.	Subscribed Capital.	Amount of Capital actually paid up.	Value of Scrip given to Shareholders on which no Cash paid.	Number of Shares allotted.	Amount paid up per Share.	Arrears of Calls.	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.	Amount of Debts owing by Company.
										Quantity.	Value.			
OTAGO DISTRICT—*continued*.														
		£	£	£		£ s. d.	£			Oz.		£	£	£
Premier Sunrise Gold-mining Co. (Ltd.) ..	11/4/02	2,500	2,500	2,500	2,500	0 2 0	..	147	30	3,103	11,877	10,437	625	105
Reliance Gold-dredging Co. (Ltd.)	30/10/99	3,600	3,000	600	3,600	1 0 0	..	54	7	2,072	7,977	10,996	900	240
Revival Gold-dredging Co. (Ltd.)	27/8/03	2,000	775	600	2,600	0 8 0	25	13	8	50	192	880	..	600
Riley's Beach Gold-dredging Co. (Ltd.) ..	22/2/01	8,625	7,311	4,500	9,000	1 15 0	..	106	8	2,331	8,998	16,006	3,460	90
Rise and Shine Gold-dredging Co. (Ltd.) ..	24/2/00	10,000	9,753	2,000	12,000	1 0 0	247	188	10	3,565	13,723	25,381	300	2,258
Rising Sun Gold-dredging Co. (Ltd.)	16/2/01	8,000	5,452	2,500	8,000	1 0 0	49	83	10	235	906	8,259	..	1,831
Round Hill Mining Co. (Ltd.)	30/7/92	28,245	6,753	..	5,649	5 0 0	..	180	30	18,102	72,109	84,291	..	239
Roxburgh Amalgamated Mining and Sluicing Co. (Ltd.)	2/3/89	29,153	12,737	15,000	29,152	18/ & 20/	..	160	22	19,421	75,452	67,570	21,498	..
Royal Waimumu Gold-dredging Co. (Ltd.) ..	6/10/00	5,500	5,318	..	5,500	Various	21	49	10	2,065	8,082	12,661	783	54
Sailor's Bend Dredging Co. (Ltd.)	1/9/99	8,000	6,500	1,500	8,000	1 0 0	..	191	3	2,387	9,235	12,555	2,791	94
Sailor's Gully Gold mining Co. (Ltd.)	3/6/96	2,000	100	1,800	2,000	0 10 0	..	10	4	1,590	5,816	5,005	1,050	71
Sandy Point Gold-dredging Co. (Ltd.).. ..	20/2/03	8,000	8,000	..	8,000	1 0 0	..	76	9	1,282	4,381	12,642	800	271
Sheddon's Waikaka Freehold Gold-dredging Co. (Ltd.)	26/4/00	4,318	4,318	2,182	6,500	1 0 0	..	25	7	3,355	12,997	18,589	4,875	180
Shotover Quartz-mining Co. (No Liability) ..	9/3/98	7,245	6,212	1,500	28,980	0 5 0	92	43	19	1,009	3,843	8,947	..	715
Smith Gold-mining Co. (Ltd.)	19/10/98	1,700	1,700	300	2,000	1 0 0	..	18	5	784	3,097	4,847	..	22
Spec Gully Gold-dredging Co. (Ltd.)	28/6/99	6,000	4,400	1,600	6,000	1 0 0	..	88	7	1,771	7,067	12,384	..	184
Success Gold-dredging Co. (Ltd.)	16/7/97	2,400	2,400	..	2,400	1 0 0	..	23	7	6,786	26,159	18,825	9,964	227
Sunshine Gold-dredging Co. (Ltd.)	24/8/03	..	..	8,000	8,000	..	..	166	8	46	178	1,131	..	198
Taniwha Gold-dredging Co. (Ltd.)	19/12/02	700	700	..	700	1 0 0	..	8	7	647	2,489	2,841	420	165
Tinker's Gold mining Co. (Ltd.)	10/6/02	15,000	15,000	15,000	15,000	1 0 0	..	15	8	1,228	..	4,549	1,875	214
Tuapeka Dredging Co. (Ltd.)	31/7/97	2,800	2,500	300	2,800	1 0 0	..	44	7	3,430	13,204	1,721	3,290	154
Undaunted Gold-mining Co. (Ltd.)	1/3/98	15,000	15,000	..	1,500	10 0 0	..	32	10	6,467	25,067	13,800	9,750	331
Unity Gold-dredging Co. (Ltd.)	8/8/00	4,200	4,200	..	10,500	1 0 0	..	112	7	3,891	14,960	8,972	5,575	9
Upper Waipori Alluvial Gold-dredging Co. (Ltd.)	3/9/89	4,000	5,950	5,000	4,800	0 8 6	..	82	9	15,117	57,858	46,719	12,360	428
Victoria Gold-mining Co. (Ltd.)	29/4/03	1,000	750	..	1,000	0 15 0	..	8	..	4	16	3	..	..
Vinegar Hill Hydraulic Sluicing Co. (Ltd.) ..	..	6,000	6,000	..	6,000	1 0 0	..	12	7	..	2,163	2,833	..	639
Voltaic Dredging Co. (Ltd.)	28/3/02	2,500	2,410	..	2,500	Various	90	57	5	128	492	3,526	..	5,938
Waikaia Gold dredging Co. (Ltd.)	20/10/03	1,750	528	50	1,800	0 7 6	128	30	..	..	..	108	..	381
Waikaka Gold-dredging Co. (Ltd.)	9/5/00	4,900	4,628	1,600	6,500	1 0 0	..	57	8	2,286	9,022	11,618	1,549	194
Waikaka Queen Gold-dredging Co. (Ltd.) ..	6/7/99	5,510	5,493	1,050	6,560	Various	..	100	8	2,021	8,337	14,439	..	828
Waikaka Syndicate (Ltd.)	20/12/01	3,000	1,801	4,000	7,000	0 12 0	..	17	7	834	3,286	5,848	..	1,200
Waikaka United Gold-dredging Co. (Ltd.) ..	11/2/99	4,700	4,700	6,500	11,200	1 0 0	..	26	16	4,671	17,986	20,421	2,240	98
Waimumu Extended Dredging Co. (Ltd.) ..	25/4/99	6,500	2,000	4,500	6,500	1 0 0	..	50	8	2,960	11,443	11,794	1,625	212
Waimumu Gold-dredging Co. (Ltd.)	29/11/97	6,000	6,000	1,000	7,000	1 0 0	..	91	8	4,931	19,366	21,904	3,238	93
Waimumu Queen Gold-dredging Co. (Ltd.) ..	21/6/99	5,200	4,682	1,800	7,000	0 18 0	..	62	10	2,969	11,867	15,376	2,625	359
Waipori Consolidated Gold Dredges (No Liability)	22/3/99	2,275	2,275	225	2,500	1 0 0	..	7	7	2,735	10,306	12,093	1,625	180
Waitahuna Dredging Co. (Ltd.)	22/2/02	1,380	1,380	..	1,380	1 0 0	..	23	:	605	2,330	3,760	483	..
Zealandia Syndicate (Ltd.)	21/10/99	4,000	4,000	3,000	7,000	1 0 0	..	59	..	..	..	3,786	268	95
Totals	..	987,449	634,278	433,427	1,105,958	..	4,684	10,902	1,139	503,662	1,963,181	1,833,581	607,854	60,285
Grand totals	..	2,312,284	1,255,131	730,716	5,556,018	..	16,257	21,675	2,031	788,511	3,224,087	3,582,083	956,351	114,987

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 Shareholders on Colonial Register.	Number of Men employed in Colony.	Quantity and Value of Gold or Silver produced since Registration.		Total Expenditure since Registration.	Total Amount of Dividends paid in Colony.	Amount of Debts owing by Company.
										Quantity.	Value.			
AUCKLAND DISTRICT.														
		£	£	£		£ s. d.	£ s. d.			Oz.	£	£	£	£
Kauri Freehold Gold Estates (Ltd.)	23/3/00	250,000	2,824	..	8,903	1 0 0	..	21	8	23,159	46,308	117,947	..	3,326
Komata Reefs Gold-mining Co. (Ltd.)	16/10/00	200,000	..	..	173,932	0 5 0	..	..	94	98,462	75,706	65,599	2,852	634
Mananu Gold-mining Co. (Ltd.)	18/10/02	60,034	314	..	1,827	1 0 0	..	16	5	..	..	2,681	..	1,462
New Zealand Crown Mines Co. (Ltd.)	27/6/96	200,000	..	100,000	44,189	1 0 0	..	138	252	193,026	463,844	429,064	8,797	3,163
Waihi Grand Junction Gold Co. (Ltd.) ..	22/12/97	178,500	2,260	112,500	7,504	1 0 0	..	43	25	..	..	79,133	..	150
Woodstock Gold-mining Co. (Ltd.)	5/2/02	149,750	3,879	..	22,702	1 0 0	..	67	5	9,727	19,454	35,260	..	1,072
Totals	..	1,038,284	9,277	212,500	259,057	..	..	285	389	324,384	605,312	729,684	11,649	9,807
NELSON AND WEST COAST DISTRICTS.														
Taitapu Gold Estates (Ltd.)	16/12/95	149,276	..	..	..	..	..	..	48	4,984	19,295	51,050	..	..
Greymouth Lagoons Gold-dredging Co. (No Liability)	–/7/01	17,740	65	8,000	2,580	0 10 0	..	6	13	865	3444	14,421	..	646
Totals	..	167,016	65	8,000	2,580	..	..	6	61	5,849	22,739	65,471	..	646
Grand Totals	..	1,205,300	9,342	220,500	261,637	..	..	291	450	330,233	628,051	795,155	11,649	10,453

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