# MINES STATEMENT.

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APPENDICES TO THE MINES STATEMENT—*continued.*

1931.

NEW ZEALAND.

# MINES STATEMENT,

BY THE HON. A. J. MURDOCH, MINISTER OF MINES.

MR. SPEAKER,—

I have the honour to present to Parliament the annual statement on the mining industry of the Dominion for the year ended 31st December, 1930.

## GOLD-MINING.

During the latter portion of the year very widespread and renewed interest was taken in prospecting for gold and other minerals. Many applicants who applied to be granted assistance had formerly been following mining as an occupation, but later obtained work in the cities and towns. Owing, however, to the difficulty in finding work in the cities, many of these men have taken a renewed interest in prospecting and mining. Quite a number of them have without any assistance from the Department been engaged in prospecting for gold in many parts of the Dominion with varying success. A record number of subsidies was granted by me, but it is too early yet to be able to make a pronouncement as to the results obtained from the work carried out. It is also pleasing to record the fact that the number of persons or companies producing gold in the year 1930 was almost 20 per cent. greater than during the preceding year. So far as the money at my command would permit, any applicant, whose application when investigated showed any merit at all, was granted some measure of assistance.

From official reports received by me and from other data it would appear that the general consensus of opinion of a mining revival taking place in New Zealand is stronger to-day than that prevailing for many years past, and sooner or later it will be found that a number of low-grade mining areas in several parts of the Dominion will be worked on a very large and comprehensive scale, and with satisfactory results financially.

The quantity of gold and silver produced during the year 1930 was greater than for several years past, but, owing to the drop in the selling-price of silver, there has not been a proportionate increase in the value.

## PROSPECTING FOR OIL.

During the year seven companies were engaged in boring for oil in several parts of the Dominion, and the aggregate footage bored by them amounted to 8,641 ft. Several of the wells produced spasmodically 9,400 gallons of oil. Boring operations are still being continued, and it is hoped that as the result commercial oil-wells will eventuate, which would be of great value to the Dominion.

## COAL-MINING.

During the year 1930 2,542,092 tons of coal was produced from the mines operating in the Dominion, which is the highest output since coal-production commenced. This may be due partly to the fact that for the first five months of the year there was a stoppage of coal-mining in the Maitland district, New South Wales, which stoppage continued for fifteen months. During the year only 157,943 tons of coal was imported from overseas, which is the lowest quantity imported since the year 1904.

It was quite evident during the latter portion of the year that a number of gasworks were importing large parcels of coal from the Maitland district, New South Wales, notwithstanding that special efforts were made by my Department and by several owners of the bituminous mines to supply their needs during the time they could not obtain coal from New South Wales. When the labour trouble in New South Wales was settled, and notwithstanding the great assistance given by the owners of several of the bituminous mines, two or three gasworks proprietors practically ceased to buy regular supplies in substantial parcels of New Zealand coal, but ordered large quantities from overseas, thus causing a serious loss not only to the miners, but also to the coalowners, some Harbour Boards, and to the Government.

The quantity of coal imported by gasworks during the latter half of the year was 34,216 tons, or nearly 34 per cent. of the total quantity of coal imported in that period. In addition, some of the gasworks were supplied with imported coal through coal-trading merchants, but the quantity is not known. The quantity imported by merchants and others during that period was 67,718 tons, or 66 per cent.

## CO-OPERATIVE MINING, STATE COAL RESERVE.

During the year ended the 31st December last, nineteen co-operative parties, working small portions of the State Coal Reserve in the vicinity of Greymouth under leases granted by my predecessors and myself, produced 104,209 tons of coal, which is a record output since co-operative mining was commenced upon such reserve. The lessees carry out the development work, provide their own plant and machinery, and make their own arrangements for selling the coal produced.

It was in 1921 that my predecessor arranged to grant leases to co-operative parties to work this reserve, and from that year until the end of last year there have been produced by such co-operative parties 538,390 tons of coal, in respect of which the State Coal-mines Account has been credited with £22,515 by way of royalties. These parties are regarded as an asset to the Dominion, in that they may be relied upon to pursue their calling with regularity. The men engaged in such industry are generally the best of miners and usually they take pains in so mining the coal as to secure a maximum production at a minimum expenditure. If it were possible to make arrangements to work the two State Coal-mines on a co-operative basis I feel confident that not only the men engaged, but also the Government as well as the Dominion, would obtain better results than under the present system.

The total quantity of coal produced by co-operative parties and co-operative contract parties throughout the whole of the Dominion for the year ended the 31st December last was approximately 286,520 tons, and there were employed in connection with such operations about 596 men.

## CO-OPERATIVE CONTRACT MINING.

During the year 1924 arrangements were made with three groups of State coal-miners to work two sections of the Liverpool Colliery and one section of the James Colliery on a co-operative basis. Payment for the coal supplied was based upon the actual costs of working such sections under another method. One section was worked under the co-operative system for a period of six months, and the other sections for shorter periods. The results obtained demonstrated clearly that the men obtained material benefits when compared with what they would have gained under the old system, and that such benefits were obtained by the good spirit and

fine team-work that prevailed in carrying out mining operations. It was also manifest that under the co-operative principle the relationship established between the men and the Department's officials was of a most cordial nature.

Owing to those members of the Miners' Union who were not working on a co-operative system striking, and owing to intimidation, the three co-operative parties were compelled to cancel their contracts with the Department, thus bringing to a termination an honest and earnest endeavour on the part of the men to better their conditions and to bring about a better relationship between themselves and the officials.

Since that time several other privately owned mines have been and are still being worked under co-operative contracts. From the knowledge obtained by the Department as regards some of the mines working under such system it is an established fact that the men have materially improved their conditions and at the same time the coalowners have been able to carry on without making a loss. But for changing the system of working, more than one colliery company would have had to cease mining operations owing to the serious losses suffered in working under the old system in consequence of the frequency with which strikes occurred and other causes.

Under the co-operative contract system the contractors are placed in possession of mines which have been developed and equipped with the required plant and machinery to work the same and at considerable cost, and as payment for the work performed by the contractors they are allowed so much per ton by the owners for the coal produced. It is obvious that by co-operative efforts on the part of the men they are able to obtain better results than those gained under the old system.

It should be manifest to the miners as a whole that by striking promiscuously as some of them have been doing they will inevitably compel those who are working mines, in which large sums are invested, to consider the question of changing the system of working so as to obtain uniformity of output, and to enable them to pay their way, and at the same time to sell coal to the public at reasonable prices. The intermittent working in consequence of strikes is undoubtedly the cause of serious hardship to those engaged in general business in coal-mining townships, and to those who are handling coal at the ports of delivery and discharge. If such stoppages could be obviated the result would be that the income of those who are working in the industry would be more satisfactory than it is at present, and the consumers of coal could look forward to a reduction in the selling-prices.

## STATE COAL-MINES.

During the year ended the 31st March, 1931, the Liverpool Mine did not work on ten days owing to extra holidays taken by the miners after Christmas and stopping work periodically, the effect being that the miners lost £3,610 in wages and the Department £1,410. During the same period four days were not worked at the James Mine for similar reasons, causing a wages loss of £372 to the men employed, and a loss to the Department of £200. In my opinion these stoppages should not have occurred.

In the industrial agreements under which the State coal-mines are being worked provision is made that if any dispute arises at any time concerning any matter not specially provided for by the agreements such disputes shall be first referred to the disputes committee at the mine, and, failing a settlement being arrived at by that committee, the disputes shall be referred by it to a central committee, but, unfortunately, such tribunal was not availed of when the stoppages occurred.

There is no doubt whatever in my mind that there are far too many stoppages at the State coal-mines, and if they could be obviated the Government would be in a position to reduce the selling-price of coal to the public.

It may be mentioned that since August, 1920, the Department has been subsidizing the cost of the railway fares for conveying the workmen to and from Rewanui. For the year ended 31st March, 1931, the subsidy paid by the Department amounted to £742, which is equivalent to about 1½d. per ton on all coal produced and sold from that colliery. The men employed at the James Colliery are carried to and

from their work by means of buses, and the Department has for some years been subsidizing the cost incurred in that respect. For the year ended 31st March last the subsidy amounted to £359, which is about 2d. per ton on all coal produced from that mine and sold during that year.

It is a practice on the part of all collieries to supply the employees with coal at reduced rates. The amount charged by the Department is at the rate of 3s. per ton at the bins, the men paying in addition thereto the cost of haulage and cartage. For the year ended the 31st March, 1931, the loss incurred by the Department in respect of these sales was about 14s. 6d. per ton. In addition, the Department has been for some years subsidizing the salary of the doctor employed by the miners at the rate of £200 a year. Grants have also been made for bowling-greens, tennis-courts, croquet-lawns, and maintaining the streets in the borough. Loans have been granted to thirty-four miners to enable them to erect dwellings to accommodate the men, their wives, and families.

Notwithstanding the fact that the mines are being operated as State coal-mines and for the benefit of the public, and that special benefits are enjoyed by the miners, it is appalling to find the men stopping periodically without any real reason. Some of the stoppages have caused certain large consumers of State coal to purchase their supplies from overseas. The system under which the State mines are being worked is not satisfactory, and if stoppages recur the Government will be compelled to consider other methods by which the mines can be operated. The interests of the public might be better served if the whole of the State coal-mines could be worked in suitable sections on a co-operative basis. Consumers of State coal would thus have their requirements supplied, and at lower prices than those ruling to-day.

## Housing.

With the object of enabling miners and other employees working at the State collieries to erect and own their own homes, a housing scheme was introduced by the Government several years ago, but it was not until four years ago that the employees availed themselves of the opportunity thus offered.

To the 31st March, 1931, thirty-five loans for financing the cost of the erection of houses have been sanctioned, the lowest advance being for £250 and the highest £300. Repayments are made at the rate of 3s. 3½d. per week for each £100 loaned, and at the end of twenty years' time the loan is liquidated.

## Output and Sales.

The operations of the State coal-mines and State coal-depots for the year ended 31st March, 1931, are briefly reviewed hereunder.

*Liverpool Colliery.*—The gross output for the year was 131,103 tons, as compared with 141,420 tons for last year, a reduction of 10,317 tons.

*James Colliery.*—The gross output for the year was 42,391 tons, as compared with 43,965 tons for last year, a reduction of 1,574 tons.

A comparative statement for the two years is shown hereunder :—

| Mine. | Output, in Tons, 1930–31. | | Output, in Tons, 1929–30. | |
|---|---|---|---|---|
| | Gross. | Net. | Gross. | Net. |
| Liverpool .. .. | 131,103 | 125,430 | 141,420 | 134,740 |
| James .. .. | 42,391 | 41,081 | 43,965 | 42,950 |

Note.—The difference between the gross and the net output is the allowance for mine consumption and waste. In addition to the above, 6,577 tons of coal were purchased for resale, of which 4,542 tons were purchased from co-operative parties on the West Coast.

The disposal, inclusive of stock on hand at the beginning of the year, was as follows: Supplied to—Depots, 61,849 tons; railways, 14,604 tons; other Government Departments, 4,927 tons; shipping, 9,244 tons; gasworks, 65,286 tons; other consumers, 9,575 tons: total, 165,485 tons.

The total sales of State coal from the Liverpool Mine for the year amounted to 124,324 tons, value £172,639,* as compared with 139,376 tons, value £189,569,* for last year—a decrease of 15,052 tons, with a decrease in value of £16,930.

The average price realized by the mine on the total sales for the year was £1 7s. 9·3d., an increase of 6·9d. on last year's average.

The total sales of State coal from the James Mine for the year amounted to 41,161 tons, value £50,359,* as compared with 43,410 tons, value £55,609,* for last year—a decrease of 2,249 tons, with a decrease in value of £5,250.

The average price realized by the mine on the total sales for the year was £1 4s. 5·6d. per ton, a decrease of 1s. 1·8d. on last year's average.

The sales of coal, &c., through the medium of the depots totalled 133,220 tons, value £246,870, as against 144,100 tons, value £271,269, for last year.

The Macdonald Colliery, which was leased as from 11th July, 1930, shows a loss on the working up to 31st March of £2,146, but this is due to the fact that, before any coal could be won, the lessees had to carry out a considerable amount of development work occupying some six months, and consequently the royalty was payable for a period of only a little over two months. It is anticipated that a profit will be made in the future.

Through irregularity and variation of orders and stoppages the Liverpool Colliery worked fifteen days less than during the previous year, resulting in a reduced output and increased costs causing a financial loss. Notwithstanding this, however, and as the year was a difficult one from a trading point of view, the financial results obtained from the State coal business may be regarded as satisfactory, there being a net profit of £7,995 after allowing for payment of interest and depreciation. Of that amount there was credited to the Sinking Fund the sum of £7,632.

## Items from Balance-sheet.

The following items taken from the balance-sheet, which has been audited, will prove of interest as indicating the more important items of expenditure and for reference in respect of the position of Capital Account, reserve funds, and other accounts shown therein :—

| | £ |
|---|---|
| The payments for interest totalled | 6,179 |
| The cost of sea carriage of coal amounted to | 57,883 |
| The cost of railway haulage amounted to | 43,233 |
| The total wages paid for coal-winning were | 103,882 |
| The amount paid for management and office salaries (Head Office and mines) totalled | 4,144 |
| The gross capital expenditure on the whole undertaking to the 31st March last was | 666,165 |
| The total depreciation written off to date (equal to 62·64 per cent. of the gross capital expenditure) amounts to | 417,314 |
| The amount written off for depreciation for the year was | 12,915 |
| The present book value of permanent or fixed assets is | 248,851 |
| The loan capital stands at | 149,383 |
| The net profits of the State Coal-mines Account from inception to 31st March, 1931, are | 187,169 |
| The net profit for the year ended 31st March, 1931, was | 7,995 |
| The Sinking Fund is in credit | 7,739 |
| The amount taken out of the Sinking Fund during the year and applied in reduction of loan capital was | 7,900 |
| General Reserve stands at | 190,675 |
| The amount at credit of Profit and Loss is | 363 |
| The cash in hand and in the Public Account as at 31st March, 1931, was (last year £8,257) | 1,503 |

* These values include sales made c. and f. and f.o.b. as well as f.o.r.

## MINERAL PRODUCTION.

The following statement shows the quantity and value of the production of metalliferous mines, stone-quarries under the Stone-quarries Act, and of coal-mines during 1930 and 1929 :—

| Mineral. | 1930. | | 1929. | |
|---|---|---|---|---|
| | Quantity. | Value. | Quantity. | Value. |
| | | £ | | £ |
| Gold and silver* .. .. .. | 639,795 oz. | 550,978 | 571,320 oz. | 527,340 |
| Platinum .. .. .. .. | 2½ ,, | 16 | 7 ,, | 36 |
| Tungsten-ore .. .. .. .. | 23 8/20 tons | 1,207 | 22 8/20 tons | 2,613 |
| Sulphur .. .. .. .. | 849 ,, | 13,261 | 967 ,, | 13,918 |
| Iron .. .. .. .. | 8,075 ,, | 40,375 | 4,393 ,, | 21,965 |
| Stone .. .. .. .. | .. | 413,291 | .. | 479,199 |
| Pumice .. .. .. .. | 2,559 ,, | 8,472 | 2,242 ,, | 8,298 |
| Coal .. .. .. .. | 2,542,092 ,, | 2,542,092 | 2,535,864 ,, | 2,535,864 |
| Silica-sand .. .. .. .. | 53 9/20 ,, | 27 | 318 ,, | 159 |
| Quicksilver .. .. .. .. | 1 6/20 ,, | 1,080 | .. | .. |
| Totals .. .. .. | .. | £3,570,799 | .. | £3,589,392 |

* The gold-silver bullion is generally exported unseparated.

The value of minerals, including kauri-gum, exported and of the coal used in the Dominion, which is shown in Table No. 1 accompanying this Statement, amounted to £3,339,285, as compared with £3,337,871 during 1929. The total value of such minerals exported to the end of 1930 amounted to £176,142,551.

## GOLD AND SILVER MINING.

The following statement shows the quantity and value of bullion-production, the dividends paid by registered companies, and the number of productive claims and gold-dredges during 1930 and 1929 :—

| Class of Gold-mining. | Production of Bullion. | | | | Dividends paid by Registered Companies. | | Number of Productive Claims and Dredges. | |
|---|---|---|---|---|---|---|---|---|
| | 1930. | | 1929. | | 1930. | 1929. | 1930. | 1929. |
| | Oz. | £ | Oz. | £ | £ | £ | | |
| Quartz .. .. | 620,303 | 472,841 | 548,689 | 437,287 | 100,908 | 100,906 | 26 | 26 |
| Alluvial .. .. | 8,954 | 35,067 | 9,807 | 37,822 | 805 | 490 | 306 | 252 |
| Dredging .. | 10,538 | 43,070 | 12,824 | 52,231 | .. | 1,641 | 3 | 5 |
| Totals .. | 639,795 | 550,978 | 571,320 | 527,340 | 101,713 | 103,037 | 335 | 283 |

## COAL-MINING.

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

| Class of Coal. | Output of Coal during 1930. | | | | Total Output to the End of 1930. |
|---|---|---|---|---|---|
| | Northern District (North Island). | West Coast District (South Island). | Southern District (South Island) | Total. | |
| | Tons. | Tons. | Tons. | Tons. | Tons. |
| Bituminous and sub-bituminous | 140,911 | 1,241,964 | .. | 1,382,875 | 44,569,085 |
| Brown .. .. .. | 625,401 | 43,710 | 377,566 | 1,046,677 | 24,813,231 |
| Lignite .. .. .. | .. | 397 | 112,143 | 112,540 | 4,440,475 |
| Totals for 1930 .. | 766,312 | 1,286,071 | 489,709 | 2,542,092 | 73,840,791 |
| Totals for 1929 .. | 769,858 | 1,290,008 | 475,998 | 2,535,864 | 71,298,699 |

## PERSONS EMPLOYED IN OR ABOUT MINES AND STONE-QUARRIES.

The following table shows the number of persons employed in each inspection district during 1930 and 1929 :—

| Classification. | Inspection District. | | | Totals. | | |
|---|---|---|---|---|---|---|
| | Northern (North Island). | West Coast (of South Island). | Southern (rest of South Island). | 1930. | 1929. | Increase or Decrease. |
| Gold, silver, and tungsten ore | 729 | 470 | 365 | 1,564 | 1,485 | Inc. 79 |
| Ironstone .. .. .. | .. | 120 | .. | 120 | 20 | ,, 100 |
| Cinnabar .. .. .. | 54 | .. | .. | 54 | 59 | Dec. 5 |
| Sulphur .. .. .. | 25 | .. | .. | 25 | 15 | Inc. 10 |
| Coal .. .. .. | 1,814 | 3,120 | 933 | 5,867 | 5,497 | ,, 370 |
| Stone-quarries under the Stone-quarries Act | 1,395 | 138 | 425 | 1,958 | 2,130 | Dec. 172 |
| Oil .. .. .. | 51 | .. | .. | 51 | 30 | Inc. 21 |
| Silica-sand .. .. .. | .. | .. | 2 | 2 | 2 | .. |
| Totals .. .. | 4,068 | 3,848 | 1,725 | 9,641 | 9,238 | Inc. 403 |

## MINING AND QUARRY ACCIDENTS.

Despite the fact that every effort is made to maintain safe working-conditions at mines and quarries, the mining industry is not without its quota of accidents, but, fortunately, having regard to the number of men employed, the percentage is not large.

In metalliferous mines, at which 1,740 men were ordinarily employed, one person was killed and three persons seriously injured.

At stone-quarries under the Stone-quarries Act, employing 1,958 men, there was one fatal accident and seven serious accidents.

In coal-mines, where 5,867 persons were ordinarily employed, fourteen persons were killed and twenty-three persons seriously injured.

## SOCIAL AMENITIES AT MINING TOWNSHIPS.

Grants were authorized during last year from the State Coal-mines Account for street-lighting, renovating the Memorial Institute, and for improvements to the Domain at Runanga.

At Seddonville a bowling-green has been completed, largely owing to the efforts of Mr. J. Smith, assisted by local residents ; a bowling trophy, known as the Williams Cup, has been presented by Mr. Williams, of Westport, for competition among the country clubs, and matches for this trophy are keenly contested ; at Granity the local band, which runs the picture-hall, installed a "talkie" motion-picture machine, and the enterprise has proved entirely successful.

The Ohai Recreation Association acquired eight acres in Ohai Township, the cost of same being secured by subscription ; a football-ground and two asphalt tennis-courts have been put down on this area and are in use.

The facilities previously provided are being well maintained and patronized by the miners and by their friends and families.

## GEOLOGICAL SURVEY.

During the 1930–31 field season the Geological Survey continued the detailed examination of the Te Kuiti, Eketahuna, and Amuri Subdivisions. In the Te Kuiti district lime is extensively quarried for agricultural purposes. There are many indications that petroleum is present in the Eketahuna district, oil companies have spent much time and money in detailed examinations, and in past years several wells have been sunk, unfortunately without success. Large deposits of limestone occur in the Amuri district and some phosphatic layers of too low a grade to be profitably worked at present. The area is of great scientific interest, for here the mountain

structure is probably more plainly displayed than elsewhere in New Zealand, and a detailed study of this region may lead to conclusions of some practical value to architects and engineers.

Two officers of the Geological Survey investigated the soils of the central part of the North Island on which region deficiency diseases of stock are prevalent. These diseases are directly dependent on the soils which are formed of, or profoundly influenced by, the showers of ash different volcanoes have ejected. The work of the geologist has been in separating out the different showers and in tracing their distribution and thickness.

Except for the annual report and a number of papers contributed by the members of the staff of the Geological Survey to the *New Zealand Journal of Science and Technology*, the only publication printed during the year was Dr. Marwick's comprehensive report on the Tertiary molluscs of the Gisborne district. This should aid geologists in working out the structure of the oil-bearing rocks of this region.

The renewed interest in prospecting entailed additional work, and, in addition, several deposits of economic or possible economic value have been examined.

## SCHOOLS OF MINES.

Competition for the six scholarships which are offered annually by the Department to students attending the schools of mines within the Dominion was again keen.

Eight candidates sat at the annual Schools of Mines examinations held in November of last year, and, of these, five candidates (three from the Thames School and two from the Dunedin School) were successful in gaining scholarships, which are tenable for four years at the University of Otago.

The expenditure on Schools of Mines for the year ended 31st March, 1931, was £3,672, as compared with £3,499 for the previous year. The schools supported are situated at Thames, Waihi, Huntly, Westport, Reefton, Runanga, and Dunedin. The work carried out has been satisfactory.

## MINERS' PENSIONS.

Pensions for miners suffering from miner's phthisis were first provided for in the Miner's Phthisis Act, 1915, which has since been incorporated in the Pensions Act, 1926. The original provision was for flat-rate pensions for married and single miners respectively, payable only in cases of total incapacity, but by the Finance Act, 1929, the conditions were relaxed to cover cases of serious and permanent incapacity, and provision was made for increased pensions to miners with dependent children under fifteen years of age. The Act is administered by the Pensions Department, and the following summary supplied by that Department shows an all-round increase in payments during the twelve months ended 31st March, 1931, due principally to the amendment of the law referred to :—

| | £ |
|---|---|
| Payments from 1st November, 1915, to 31st March, 1930 | 446,031 |
| Payments, 1930–31 | 58,441 |
| Total payments to 31st March, 1931 | £504,472 |
| Number of new grants for year 1930–31 | 155 |
| Annual value of new grants | £14,222 |
| Number of pensions in force at 31st March, 1931 | 876 |
| Annual value of pensions in force at 31st March, 1931 | £62,575 |
| Average pension per annum | £71 8s. 7d. |
| Number of pensions granted to 31st March, 1931 | 1,782 |
| Dissection of pensions in force at 31st March, 1931— | |
| Unmarried miners | 149 |
| Married miners | 332 |
| Miners' widows | 395 |
| | 876 |

## INVESTIGATIONS, NEW ZEALAND COALS.

During the year the chemists employed upon coal-research work at the Dominion Laboratory have continued with important investigations, consisting chiefly of the low-temperature carbonization of Blackball and Millerton coals in the Fischer retort, and examination of the products. The results have been published as Bulletin 29 of the Department of Scientific and Industrial Research. The yield of oil from Blackball coal, 39 gallons per ton, is the highest from any New Zealand coal so far treated in the Fischer retort. Work on the composition of such oils is proceeding with a view to discovering more profitable uses than merely as oil fuel.

Further experiments with swelling and non-swelling coals have been carried out, and blends suitable for use in gasmaking can now be recommended.

The progress of hydrogenation of coal and coal oil in older countries is carefully followed by the Research Association. Through the courtesy of Imperial Chemical Industries, Ltd., the yields of oil from several New Zealand coals by hydrogenation have been ascertained. In spite of great advances, it has not yet been established that oil from coal can compete commercially with petroleum oil.

The research work which has been carried out is regarded as not only helpful to the Mining Industry, but is of particular assistance to those who are interesting themselves in projects having for their object the treatment of our coals.

## COAL-MINERS' RELIEF FUND.

The Miners' Sick and Accident Funds having been abolished as from the 1st April, 1926, and incorporated in the Coal-miners' Relief Fund, all accident relief payments are now made from the latter fund, which is administered by the Public Trustee.

Notwithstanding that the Public Trustee increased, as from the 1st April, 1927, the rate of interest on the funds by ½ per cent., the Relief Fund shows a diminution of £289 12s. 2d. for the year ended 31st March, 1931, as against a diminution of £1,290 17s. 3d. for the year ended 31st March, 1930. This has been caused by the payments for relief exceeding the receipts for the year.

The interest earned for the twelve months ended 31st March, 1931, was £1,240 17s. 6d., as against £1,311 13s. 9d. for the previous year, while for the same periods the receipts from the ½d. per ton contributions were £5,579 12s. 1d. and £4,924 3s. 11d. respectively.

The total expenditure for the year ended 31st March, 1931, amounted to £7,110 1s. 9d., as against £7,526 14s. 11d. for the previous year.

The amount standing to the credit of the fund as at the 31st March, 1931, was £23,890 14s. 5d., as against £24,180 6s. 7d. at the 31st March, 1930.

## MINING PRIVILEGES.

That renewed interest is being taken in the mining industry is shown by the fact that during the year ended 31st March, 1931, 544 licenses for mining privileges were granted under the provisions of the Mining Act, 1926. Out of this number eighty-one were licenses for claims authorizing the holders to mine for gold. For the same period 125 mining privileges, including thirty licenses for claims, were struck off the registers under the provisions of section 188 of the said Act.

## STATE AID TO MINING.

As in previous years, considerable use was made of the Government prospecting drills. They were hired by seven parties, and a total of 6,038 ft. was drilled.

The sum of £9,000 was voted for expenditure by way of subsidies for prospecting.

The balance of unexpended authorities at the 31st March, 1930, and those issued during the year, less cancellations, amounted to £9,217 4s. 11d. Of this amount, the sum of £3,780 19s. 3d. was actually expended during the year, leaving the sum of £5,436 5s. 8d. authorized but not spent at the 31st March, 1931. The subsidies gave employment to 172 persons.

Towards the end of the financial year the sum of £2,000 was also allocated to the Department by the Unemployment Board to enable subsidies to be granted to unemployed married miners to prospect approved areas, and of this amount the sum of £1,864 2s. 10d. had been authorized up to the end of March. Seventy-three men were given employment in this way.

Provision totalling £8,441, including £7,441 in the Public Works Fund, was made for expenditure by way of direct grants and subsidies for roads and tracks, of which the sum of £4,000 was voted for expenditure during the year.

The balance of the unexpended authorities at the 31st March, 1930, and those issued during the year amounted to £6,767 8s. 6d. Of this amount the sum of £5,381 8s. 4d. was expended, which was greater by £1,381 8s. 4d. than the amount actually voted for the year.

As usual, all applications for assistance in this direction were carefully investigated, and assistance was granted in those cases where the results of the investigations warranted it.

The expenditure on schools of mines amounted to £3,672 4s. 3d.

# TABLES TO ACCOMPANY MINES STATEMENT.

## No. 1.

TABLE SHOWING THE QUANTITY AND VALUE OF GOLD AND OTHER MINERALS AND ALLIED SUBSTANCES EXPORTED DURING THE YEARS ENDED THE 31ST DECEMBER, 1930 AND 1929, AND THE TOTAL VALUE SINCE THE 1ST JANUARY, 1853. THE COAL-OUTPUT IS ALSO INCLUDED.

| Name of Metal or Mineral. | For Year ended the 31st December, 1930. | | For Year ended the 31st December, 1929. | | Total from the 1st January, 1853, to the 31st December, 1930. | |
|---|---|---|---|---|---|---|
| | Quantity. | Value. | Quantity. | Value. | Quantity. | Value. |
| Precious metals— | Oz. | £ | Oz. | £ | Oz. | £ |
| Gold* .. .. .. | 133,749 | 550,678 | 116,848 | 480,212 | 23,916,054 | 94,458,512 |
| Silver .. .. .. | 566,063 | 44,534 | 416,262 | 41,475 | 27,408,957 | 3,189,674 |
| Total gold and silver .. | 699,812 | 595,212 | 533,110 | 521,687 | 51,325,011 | 97,648,186 |
| Mineral produce, including kauri-gum— | Tons. | £ | Tons. | £ | Tons. | £ |
| Copper-ore .. .. | .. | .. | .. | .. | 1,504 | 19,390 |
| Chrome-ore .. .. | .. | .. | .. | .. | 5,869 | 38,002 |
| Antimony-ore .. .. | .. | .. | .. | .. | 3,781 | 55,045 |
| Manganese-ore .. .. | 2 | 5 | .. | .. | 19,386$\frac{1}{20}$ | 62,011 |
| Hæmatite-ore .. .. | .. | .. | .. | .. | 77 | 469 |
| Tungsten-ore .. .. | 17$\frac{8}{20}$ | 1,469 | 33$\frac{9}{20}$ | 3,468 | 2,453$\frac{2}{20}$ | 311,209 |
| Quicksilver .. .. | 1$\frac{16}{20}$ | 1,188 | .. | .. | 18$\frac{8}{20}$ | 9,524 |
| Sulphur (crude) .. .. | .. | .. | .. | .. | 4,927 | 13,241 |
| Mixed minerals† .. .. | 2,838$\frac{4}{20}$ | 9,437 | 2,322$\frac{12}{20}$ | 9,052 | 86,489$\frac{16}{20}$ | 358,942 |
| Coal (New Zealand) exported | 126,118 | 186,210 | 205,403 | 284,521 | 6,391,483 | 7,071,732 |
| Coke exported .. .. | 60 | 218 | 54 | 190 | 17,737 | 28,084 |
| Coal, output of mines in Dominion (less exports) | 2,415,974 | 2,355,882 | 2,330,461 | 2,251,343 | 67,449,308 | 47,681,098 |
| Oil-shale .. .. | .. | .. | .. | .. | 14,444 | 7,236 |
| Kauri-gum .. .. | 3,818 | 189,635 | 4,937 | 267,610 | 417,122 | 22,831,767 |
| Pig iron .. .. .. | 4 | 29 | .. | .. | 1,614 | 6,615 |
| Total quantity and value of minerals | 2,548,833$\frac{8}{20}$ | 2,744,073 | 2,543,211$\frac{1}{20}$ | 2,816,184 | 74,416,213$\frac{17}{20}$ | 78,494,365 |
| Value of gold and silver, as above | .. | 595,212 | .. | 521,687 | .. | 97,648,186 |
| Total value of minerals, including gold and silver | .. | 3,339,285 | .. | 3,337,871 | .. | 176,142,551 |

* In respect of gold, ounces of the fineness of 20 carats and upwards. † Including pumice-sand, 2,559 tons.

## No. 2.

TABLE SHOWING THE QUANTITY AND VALUE OF GOLD EXPORTED FROM NEW ZEALAND FOR THE YEARS ENDED THE 31ST DECEMBER, 1930 AND 1929, AND THE TOTAL QUANTITY AND VALUE FROM 1857 TO THE 31ST DECEMBER, 1930.

| District and County or Borough. | Year ended 31st December, 1930. | | Year ended 31st December, 1929. | | Total Quantity and Value from January, 1857, to 31st December, 1930. | |
|---|---|---|---|---|---|---|
| | Quantity. | Value. | Quantity. | Value. | | |
| AUCKLAND— | Oz. | £ | Oz. | £ | Oz. | £ |
| County of Ohinemuri .. | 249 | 1,061 | 538 | 1,946 | | |
| County of Coromandel .. | 284 | 1,231 | 115 | 419 | | |
| County of Thames .. .. | 311 | 1,406 | 510 | 1,854 | | |
| Borough of Waihi .. .. | 82,319 | 344,893 | 74,381 | 312,032 | | |
| Borough of Thames .. | .. | .. | 12 | 46 | | |
| | 83,163 | 348,591 | 75,556 | 316,297 | 7,632,968 | 29,735,415 |
| WELLINGTON .. .. | .. | .. | .. | .. | 188 | 706 |
| MARLBOROUGH— | | | | | | |
| County of Marlborough .. | 145 | 543 | 1,208 | 4,683 | 108,695 | 423,129 |
| NELSON— | | | | | | |
| County of Collingwood .. | 100 | 376 | 50 | 189 | | |
| County of Murchison .. | 74 | 272 | 126 | 505 | | |
| | 174 | 648 | 176 | 694 | 1,742,762 | 6,909,827 |
| WEST COAST— | | | | | | |
| County of Grey .. .. | 345 | 1,343 | .. | .. | | |
| County of Buller .. .. | .. | .. | 86 | 330 | | |
| County of Inangahua .. | 21,196 | 82,494 | 20,857 | 81,164 | | |
| County of Westland .. | 11,152 | 44,983 | 12,635 | 51,190 | | |
| | 32,693 | 128,820 | 33,578 | 132,684 | 6,623,535 | 26,291,301 |
| CANTERBURY .. .. | .. | .. | .. | .. | 157 | 620 |
| OTAGO— | | | | | | |
| County of Tuapeka .. | 8,031 | 33,230 | 904 | 3,707 | | |
| County of Vincent .. .. | 981 | 3,833 | 1,398 | 5,709 | | |
| County of Maniototo .. | 4,885 | 20,179 | 996 | 4,066 | | |
| County of Waitaki .. .. | 674 | 2,767 | .. | .. | | |
| County of Lake .. .. | 863 | 3,529 | 653 | 2,635 | | |
| County of Wallace .. .. | 70 | 282 | 764 | 3,026 | | |
| County of Southland .. | 1,477 | 5,919 | 1,079 | 4,660 | | |
| County of Waihemo .. | 18 | 70 | 22 | 90 | | |
| | 16,999 | 69,809 | 5,816 | 23,893 | 7,795,931 | 31,050,081 |
| Unknown .. .. .. | 575 | 2,267 | 514 | 1,961 | 11,818 | 47,433 |
| Totals .. .. | 133,749 | 550,678 | 116,848 | 480,212 | 23,916,054 | 94,458,512 |

## No. 3.

TABLE SHOWING THE OUTPUT OF COAL FROM THE VARIOUS COALFIELDS, AND THE COMPARATIVE INCREASE AND DECREASE, FOR THE YEARS 1930 AND 1929, TOGETHER WITH THE TOTAL APPROXIMATE QUANTITY OF COAL PRODUCED SINCE THE MINES WERE OPENED.

| Name of Coalfield. | Output. | | Increase. | Decrease. | Approximate Total Output up to 31st December, 1930. |
|---|---|---|---|---|---|
| | 1930. | 1929. | | | |
| | Tons. | Tons. | Tons. | Tons. | Tons. |
| North Auckland .. .. | 140,911 | 116,109 | 24,802 | .. | 5,238,725 |
| Waikato (including Taranaki) .. | 625,401 | 653,749 | .. | 28,348 | 11,547,924 |
| Nelson .. .. .. | 17,384 | 19,202 | .. | 1,818 | 488,162 |
| Buller .. .. .. | 616,681 | 657,533 | .. | 40,852 | 22,624,487 |
| Reefton .. .. .. | 42,795 | 36,798 | 5,997 | .. | 718,250 |
| Grey .. .. .. | 609,211 | 576,475 | 32,736 | .. | 14,202,190 |
| Canterbury .. .. .. | 9,204 | 9,449 | .. | 245 | 973,072 |
| Otago .. .. .. | 195,802 | 182,515 | 13,287 | .. | 12,222,211 |
| Southland .. .. .. | 284,703 | 284,034 | 669 | .. | 5,825,770 |
| Totals .. .. | 2,542,092* | 2,535,864 | .. | .. | 73,840,791 |

* Increase, 6,228 tons.

## No. 4.

TABLE SHOWING THE OUTPUT OF DIFFERENT CLASSES OF COAL.

| Class of Coal. | Output. | | Increase. | Decrease. | Approximate Total Output to the 31st December, 1930. |
|---|---|---|---|---|---|
| | 1930. | 1929. | | | |
| | Tons. | Tons. | Tons. | Tons. | Tons. |
| Bituminous and semi-bituminous.. | 1,382,875 | 1,367,164 | 15,711 | .. | 44,569,085 |
| Brown .. .. .. | 1,046,677 | 1,049,603 | .. | 2,926 | 24,831,231 |
| Lignite .. .. .. | 112,540 | 119,097 | .. | 6,557 | 4,440,475 |
| Totals .. .. | 2,542,092 | 2,535,864 | 6,228 | .. | 73,840,791 |

## No. 5.

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

| Year. | Coal and Shale raised in the Dominion. | | Coal imported. | | |
|---|---|---|---|---|---|
| | Tons. | Yearly Increase or Decrease. | Tons. | Increase over Preceding Year. | Decrease below Preceding Year. |
| Prior to 1878 .. | 709,931 | .. | .. | .. | .. |
| 1878 .. .. | 162,218 | .. | 174,148 | .. | .. |
| 1879 .. .. | 231,218 | Inc. 69,000 | 158,076 | .. | 16,072 |
| 1880 .. .. | 299,923 | ,, 68,705 | 123,298 | .. | 34,778 |
| 1881 .. .. | 337,262 | ,, 37,339 | 129,962 | 6,664 | .. |
| 1882 .. .. | 378,272 | ,, 41,010 | 129,582 | .. | 380 |
| 1883 .. .. | 421,764 | ,, 43,492 | 123,540 | .. | 6,042 |
| 1884 .. .. | 480,831 | ,, 59,069 | 148,444 | 24,904 | .. |
| 1885 .. .. | 511,063 | ,, 30,232 | 130,202 | .. | 18,242 |
| 1886 .. .. | 534,353 | ,, 23,290 | 119,873 | .. | 10,329 |
| 1887 .. .. | 558,620 | ,, 24,267 | 107,230 | .. | 12,643 |
| 1888 .. .. | 613,895 | ,, 55,275 | 101,341 | .. | 5,889 |
| 1889 .. .. | 586,445 | Dec. 27,450 | 128,063 | 26,722 | .. |
| 1890 .. .. | 637,397 | Inc. 50,952 | 110,939 | .. | 17,124 |
| 1891 .. .. | 668,794 | ,, 31,397 | 125,318 | 14,379 | .. |
| 1892 .. .. | 673,315 | ,, 4,521 | 125,453 | 135 | .. |
| 1893 .. .. | 691,548 | ,, 18,233 | 117,444 | .. | 8,009 |
| 1894 .. .. | 719,546 | ,, 27,998 | 112,961 | .. | 4,483 |
| 1895 .. .. | 726,654 | ,, 7,108 | 108,198 | .. | 4,763 |
| 1896 .. .. | 792,851 | ,, 66,197 | 101,756 | .. | 6,442 |
| 1897 .. .. | 840,713 | ,, 47,862 | 110,907 | 9,151 | .. |
| 1898 .. .. | 907,033 | ,, 66,320 | 115,427 | 4,520 | .. |
| 1899 .. .. | 975,234 | ,, 68,201 | 99,655 | .. | 15,772 |
| 1900 .. .. | 1,093,990 | ,, 118,756 | 124,033 | 24,378 | .. |
| 1901 .. .. | 1,239,686 | ,, 145,696 | 149,764 | 25,731 | .. |
| 1902 .. .. | 1,365,040 | ,, 125,354 | 127,853 | .. | 21,911 |
| 1903 .. .. | 1,420,229 | ,, 55,189 | 163,923 | 36,070 | .. |
| 1904 .. .. | 1,537,838 | ,, 117,609 | 147,196 | .. | 16,727 |
| 1905 .. .. | 1,585,756 | ,, 47,918 | 169,046 | 21,850 | .. |
| 1906 .. .. | 1,729,536 | ,, 143,780 | 207,567 | 38,521 | .. |
| 1907 .. .. | 1,831,009 | ,, 101,473 | 220,749 | 13,182 | .. |
| 1908 .. .. | 1,860,975 | ,, 29,966 | 287,808 | 67,059 | .. |
| 1909 .. .. | 1,911,247 | ,, 50,272 | 258,185 | .. | 29,623 |
| 1910 .. .. | 2,197,362 | ,, 286,115 | 232,378 | .. | 25,807 |
| 1911 .. .. | 2,066,073 | Dec. 131,289 | 188,068 | .. | 44,310 |
| 1912 .. .. | 2,177,615 | Inc. 111,542 | 364,359 | 176,291 | .. |
| 1913 .. .. | 1,888,005 | Dec. 289,610 | 468,940 | 104,581 | .. |
| 1914 .. .. | 2,275,614 | Inc. 387,609 | 518,070 | 49,130 | .. |
| 1915 .. .. | 2,208,624 | Dec. 66,990 | 353,471 | .. | 164,599 |
| 1916 .. .. | 2,257,135 | Inc. 48,511 | 293,956 | .. | 59,515 |
| 1917 .. .. | 2,068,419 | Dec. 188,716 | 291,597 | .. | 2,359 |
| 1918 .. .. | 2,034,250 | ,, 34,169 | 255,332 | .. | 36,265 |
| 1919 .. .. | 1,847,848 | ,, 186,402 | 391,434 | 136,102 | .. |
| 1920 .. .. | 1,843,705 | ,, 4,143 | 476,343 | 84,909 | .. |
| 1921 .. .. | 1,809,095 | ,, 34,610 | 822,459 | 346,116 | .. |
| 1922 .. .. | 1,857,819 | Inc. 48,724 | 501,478 | .. | 320,981 |
| 1923 .. .. | 1,969,834 | ,, 112,015 | 445,792 | .. | 55,686 |
| 1924 .. .. | 2,083,207 | ,, 113,373 | 674,483 | 228,691 | .. |
| 1925 .. .. | 2,114,995 | ,, 31,788 | 572,573 | .. | 101,910 |
| 1926 .. .. | 2,239,999 | ,, 125,004 | 483,918 | .. | 88,655 |
| 1927 .. .. | 2,366,740 | ,, 126,741 | 378,090 | .. | 105,828 |
| 1928 .. .. | 2,436,753 | ,, 70,013 | 247,861 | .. | 130,229 |
| 1929 .. .. | 2,535,864 | ,, 99,111 | 215,656 | .. | 32,205 |
| 1930 .. .. | 2,542,092 | ,, 6,228 | 157,943 | .. | 57,713 |

## No. 6.

TABLE SHOWING THE TOTAL QUANTITY AND VALUE OF COAL IMPORTED INTO AND EXPORTED FROM NEW ZEALAND FROM AND TO EACH COUNTRY DURING THE CALENDAR YEAR 1930.

*Imports.*

| Country whence imported. | Tons. | Value. |
|---|---|---|
| | | £ |
| United Kingdom .. .. .. | 6,062 | 9,206 |
| Australia .. .. .. .. | 151,881 | 191,213 |
| Totals .. .. .. | 157,943 | 200,419 |

The values shown are the current domestic values in countries of export plus 10 per cent.

*Exports: Bunkers.*

| Country to which exported. | Produce of New Zealand. | | Produce of other Countries. | |
|---|---|---|---|---|
| | Tons. | Value. | Tons. | Value. |
| | | £ | | £ |
| United Kingdom .. .. | 49,127 | 98,234 | .. | .. |
| Australia .. .. .. | 24,655 | 33,104 | .. | .. |
| Fiji .. .. .. .. | 6,148 | 7,082 | .. | .. |
| Nauru Island .. .. .. | 9,769 | 10,298 | .. | .. |
| India .. .. .. .. | 200 | 450 | .. | .. |
| Hawaii .. .. .. .. | 1,298 | 1,298 | .. | .. |
| United States of America, via West Coast | 2,128 | 2,403 | .. | .. |
| Tuamotu Archipelago .. .. | 9,110 | 9,110 | .. | .. |
| Society Islands .. .. .. | 4,851 | 4,851 | .. | .. |
| Totals .. .. | 107,286 | 166,830 | .. | .. |

*Exports: Cargo.*

| Country to which exported. | Produce of New Zealand. | | Produce of other Countries. | |
|---|---|---|---|---|
| | Tons. | Value. | Tons. | Value. |
| | | £ | | £ |
| United Kingdom .. .. | 12 | 40 | .. | .. |
| Fiji .. .. .. .. | 1,926 | 2,079 | .. | .. |
| Western Samoa .. .. .. | 6 | 25 | .. | .. |
| Tonga .. .. .. .. | 1 | 8 | .. | .. |
| Papua .. .. .. .. | 1,797 | 1,866 | .. | .. |
| Nauru Island .. .. .. | 1,921 | 1,921 | .. | .. |
| Tutuila .. .. .. .. | 1,195 | 1,254 | .. | .. |
| New Caledonia .. .. .. | 2,518 | 2,631 | .. | .. |
| Society Islands .. .. .. | 9,356 | 9,356 | .. | .. |
| Antarctica .. .. .. | 100 | 200 | .. | .. |
| Totals .. .. | 18,832 | 19,380 | .. | .. |

## No. 7.

NUMBER OF PERSONS ORDINARILY EMPLOYED AT OR ABOUT MINES OTHER THAN COAL-MINES DURING THE YEAR ENDED 31ST DECEMBER, 1930.

| County or Borough. | Number of Persons ordinarily employed at | | | | Total. | |
|---|---|---|---|---|---|---|
| | Gold-quartz Mines. | Gold Alluvial Mines. | Gold-dredges. | Mines other than Gold and Coal. | 1930. | 1929. |
| NORTHERN INSPECTION DISTRICT. | | | | | | |
| County of Whangarei | .. | .. | .. | 2 | 2 | .. |
| ,, Piako | 1 | .. | .. | .. | 1 | .. |
| ,, Thames | 41 | .. | .. | .. | 41 | 28 |
| ,, Ohinemuri | 33 | .. | .. | .. | 33 | 100 |
| ,, Coromandel | 26 | .. | .. | .. | 26 | 48 |
| Borough of Thames | 38 | .. | .. | .. | 38 | 52 |
| ,, Waihi | 590 | .. | .. | .. | 590 | 573 |
| County of Wairoa | .. | .. | .. | 7 | 7 | 10 |
| ,, Taranaki | .. | .. | .. | 32 | 32 | 17 |
| ,, Waikohu | .. | .. | .. | 8 | 8 | .. |
| ,, Whangamomona | .. | .. | .. | 4 | 4 | 3 |
| ,, Bay of Islands | .. | .. | .. | 52 | 52 | 57 |
| White Island | .. | .. | .. | 25 | 25 | 15 |
| WEST COAST INSPECTION DISTRICT. | | | | | | |
| County of Marlborough | 8 | 2 | .. | .. | 10 | 26 |
| ,, Takaka | .. | .. | .. | 120 | 120 | 20 |
| ,, Collingwood | .. | 7 | .. | .. | 7 | 5 |
| ,, Murchison | .. | 12 | .. | .. | 12 | 12 |
| ,, Buller | .. | 4 | .. | .. | 4 | 11 |
| ,, Inangahua | 210 | 103 | .. | .. | 313 | 204 |
| ,, Grey | .. | 2 | .. | .. | 2 | 12 |
| ,, Westland | 3 | 32 | 53 | .. | 88 | 73 |
| Borough of Kumara | .. | 15 | .. | .. | 15 | 18 |
| ,, Hokitika | .. | 19 | .. | .. | 19 | 18 |
| ,, Ross | .. | .. | .. | .. | .. | 3 |
| SOUTHERN INSPECTION DISTRICT. | | | | | | |
| County of Ashburton | .. | .. | .. | 2 | 2 | 2 |
| ,, Tuapeka | .. | 48 | .. | .. | 48 | 50 |
| ,, Vincent | .. | 60 | 9 | .. | 69 | 50 |
| ,, Maniototo | 12 | 49 | .. | .. | 61 | 54 |
| ,, Waihemo | 6 | 1 | .. | 5 | 12 | 11 |
| ,, Waitaki | .. | 5 | .. | .. | 5 | 6 |
| ,, Lake | 1 | 49 | 13 | 20 | 83 | 45 |
| ,, Wallace | .. | 23 | .. | .. | 23 | 27 |
| ,, Southland | .. | 64 | .. | .. | 64 | 61 |
| Totals | 969 | 495 | 75 | 277* | 1,816 | 1,611 |

* Includes 25 persons employed in sulphur-mining, and 51 in oil-boring operations.

*Summary of Persons ordinarily employed in or about New Zealand Mines during 1930 and 1929.*

| —— | 1930. | 1929. | Increase or Decrease. |
|---|---|---|---|
| Gold, silver, and tungsten mines | 1,564 | 1,485 | Inc. 79 |
| Other metalliferous mines | 252* | 126 | ,, 126 |
| Coal-mines | 5,867 | 5,497 | ,, 370 |
| Totals | 7,683 | 7,108 | Inc. 575 |

* Includes 25 persons employed in sulphur-mining, and 51 in oil-boring operations.

# APPENDICES TO THE MINES STATEMENT.

## APPENDIX A.

### REPORTS RELATING TO METALLIFEROUS MINES AND STONE-QUARRIES.

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

Sir,— Wellington, 2nd July, 1931.

I have the honour to present my report on metalliferous mines and stone-quarries, together with statistical information, for the year ended 31st December, 1930.

In accordance with the usual practice, the tables showing expenditure on roads, bridges, tracks, prospecting operations, &c., are for the period covered by the financial year—viz., from the 1st April, 1930, to the 31st March, 1931.

The reports, &c., are divided into the following sections: I. Minerals produced and exported. II. Persons employed. III. Accidents. IV. Gold-mining—(1) Quartz-mining; (2) Dredge Mining; (3) Alluvial Mining. V. Minerals other than Gold. VI. Stone-quarry Inspection and Statistics. VII. State Aid to Mining—(1) Subsidized Prospecting; (2) Government Prospecting-drills; (3) Subsidized Roads on Goldfields.

Annexures: (A) Summary of Reports by Inspectors of Mines. (B) Summary of Report by Inspector of Quarries. (C) Mining Statistics.

#### I. MINERALS PRODUCED AND EXPORTED.

The following statement shows the quantity and value of the production of metal-mines and of the value of the production from stone-quarries under the Stone-quarries Act during 1930 and 1929:—

| Mineral. | 1930. | | 1929. | |
|---|---|---|---|---|
| | Quantity. | Value. | Quantity. | Value. |
| | Oz. dwt. | £ | Oz. | £ |
| Gold and silver (estimated) | 639,795 0 | 550,978 | 571,320 | 527,340 |
| Platinum | 2 10 | 16 | 7 | 36 |
| | Tons cwt. | | Tons cwt. | |
| Tungsten-ore | 23 13 | 1,207 | 22 13 | 2,613 |
| Iron | 8,075 0 | 40,375 | 4,393 0 | 21,965 |
| Stone | .. | 413,291 | .. | 479,199 |
| Pumice | 2,559 0 | 8,472 | 2,242 0 | 8,298 |
| Sulphur | 849 0 | 13,261 | 967 0 | 13,918 |
| Silica-sand | 53 19 | 27 | 318 0 | 159 |
| Quicksilver | 1 16 | 1,080 | .. | .. |
| Totals | .. | 1,028,707 | .. | 1,053,528 |

The following statement shows the value of New Zealand minerals (other than coal and coke) and allied substances exported from the 1st January, 1853, to the 31st December, 1930:—

| —— | 1930. | 1929. | Increase or Decrease. | Total from the 1st January, 1853, to the 31st December, 1930. |
|---|---|---|---|---|
| | £ | £ | £ | £ |
| Gold | 550,678 | 480,212 | Inc. 70,466 | 94,458,512 |
| Silver | 44,534 | 41,475 | „ 3,059 | 3,189,674 |
| Tungsten-ore | 1,469 | 3,468 | Dec. 1,999 | 311,209 |
| Kauri-gum | 189,635 | 267,610 | „ 77,975 | 22,831,767 |
| Pig iron | 29 | .. | Inc. 29 | 6,615 |
| Quicksilver | 1,188 | .. | „ 1,188 | 9,524 |
| Manganese-ore | 5 | .. | „ 5 | 62,011 |
| Sand, lime, and building-stone | 9,265 | 8,842 | „ 423 | 492,325 |
| Other minerals | 172 | 210 | Dec. 38 | |
| Totals | 796,975 | 801,817 | Dec. 4,842 | 121,361,637 |

## II. PERSONS EMPLOYED.

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

| Classification. | Inspection District. | | | Total, 1930. |
|---|---|---|---|---|
| | Northern. | West Coast. | Southern. | |
| Gold, silver, and tungsten .. .. .. .. | 729 | 470 | 365 | 1,564 |
| Ironstone .. .. .. .. .. .. | .. | 120 | .. | 120 |
| Cinnabar .. .. .. .. .. .. | 54 | .. | .. | 54 |
| Silica-sand .. .. .. .. .. .. | .. | .. | 2 | 2 |
| Totals for 1930 .. .. .. .. | 783 | 590 | 367 | 1,740 |
| Totals for 1929 .. .. .. .. | 858 | 402 | 306 | 1,566 |

* In addition, 25 persons were employed in sulphur-mining and 51 persons in oil-boring operations.

## III. ACCIDENTS.

During 1930 one fatal and three serious but non-fatal accidents occurred in or about metalliferous mines, at which 1,740 persons were ordinarily employed.

| Cause. | Fatal Accidents. | | Serious Non-fatal Accidents. | |
|---|---|---|---|---|
| | Number of Separate Accidents. | Number of Deaths. | Number of Separate Accidents. | Number of Persons injured. |
| Falls of ground .. .. .. .. .. .. | .. | .. | .. | .. |
| Explosives .. .. .. .. .. .. | 1 | 1 | 1 | 1 |
| Miscellaneous, on surface .. .. .. .. | .. | .. | 1 | 1 |
| Miscellaneous, underground .. .. .. .. | .. | .. | 1 | 1 |
| Totals .. .. .. .. .. | 1 | 1 | 3 | 3 |

An account of these accidents is contained in the District Inspectors' reports attached hereto.

## IV. GOLD-MINING.

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

| — | Production of Bullion, 1930.* (All Mines.) | | Dividends paid, 1930 (By Registered Companies only.)† | Number of Persons ordinarily employed at Productive and Unproductive Mines. | Number of Productive Quartz-mines, Alluvial Mines, and Dredges, 1930. |
|---|---|---|---|---|---|
| | Quantity. | Value. | | | |
| | Oz. | £ | £ | | |
| Quartz-mining .. | 620,303 | 472,841 | 100,908 | 969 | 26 |
| Alluvial mining‡ .. | 8,954 | 35,067 | 805 | 495 | 306 |
| Dredge mining .. | 10,538 | 43,070 | .. | 75 | 3 |
| Totals, 1930 .. | 639,795 | 550,978 | 101,713 | 1,539 | 335 |
| Totals, 1929 .. | 571,320 | 527,340 | 103,037 | 1,475 | 283 |

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

† The profits of privately-owned dredges and mines are unobtainable, which renders this statement incomplete.

‡ The bullion-production is from 306 alluvial claims, but the dividends are only obtainable from those few that are the property of registered companies.

The total value of the bullion produced in 1930 was greater by £23,638 than that produced in 1929. Bullion from quartz-mining increased by £35,554, while the returns from alluvial mining and dredge mining decreased by £2,755 and £9,161 respectively.

(1) QUARTZ-MINING.

| Inspection District. | Statute Tons of Ore treated. | | Value of Bullion. | | Dividends paid (by Registered Companies only). | |
|---|---|---|---|---|---|---|
| | 1930. | 1929. | 1930. | 1929. | 1930. | 1929. |
| | | | £ | £ | £ | £ |
| Northern .. .. | 201,770 | 194,401 | 386,611 | 356,359 | 100,908 | 100,906 |
| West Coast .. .. | 46,663 | 47,806 | 86,205 | 80,854 | .. | .. |
| Southern .. .. | 12 | 135 | 25 | 74 | .. | .. |
| Totals .. .. | 248,445 | 242,342 | 472,841 | 437,287 | 100,908 | 100,906 |

The average value per ton of ore treated during 1930 amounted to £1 18s. 1d., as compared with £1 16s. 1d. during 1929.

At the Waihi Mine 180,749 long tons of ore were mined during the year without encroaching but slightly on the ore reserves. The amount of gold recovered was 69,825 oz., valued at £293,263, and of silver 363,403 oz., valued at £36,340, a total of £329,603, which is £8,571 over that of the previous year. The company during the year paid out £99,181 in dividends, making the total dividends paid to date £5,842,283.

The Waihi Grand Junction property, worked by the Waihi Gold-mining Co., produced 8,712 oz. of gold, valued at £36,591, and 117,161 oz. of silver, valued at £11,716, from 16,558 tons of ore.

At the Blackwater Mine 41,112 tons of ore were mined, an increase of 3,368 tons over the previous year, and the gold produced was 17,781 oz., valued at £70,094, compared with 16,201 oz., valued at £64,394, during 1929.

(2) DREDGE MINING.

The following is a statement showing the capacity, production, and profits of bucket gold-dredges during 1930. (NOTE.—The profits made by privately-owned dredges are not obtainable for publication.)

| Name of Dredge. | Locality. | Capacity of Dredge-buckets, in Cubic Feet. | Number of Buckets discharged per Minute. | Nominal Horse-power of Engines. | S = Steam. E = Electrical. H = Hydraulic. | Average Depth of Ground dredged. | Value of Bullion obtained during 1930. | Dividends declared. | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | During 1930. | Total. |
| *Otago and Southland.* | | | | | | Ft. | £ | £ | £ |
| Golden Terrace Extended.. | Shotover River .. | 8 | 18 | 305 | E | 23 | 1,714 | .. | .. |
| Upper Nevis .. .. | Nevis River .. | 7 | 10 | 205 | E | 20 | 1,149 | .. | .. |
| *West Coast.* | | | | | | | | | |
| Rimu .. .. .. | Rimu Flat .. | 10 | 19 | 450 | E | 40 | 40,207 | .. | 24,622 |
| Totals, 1930 .. | .. | .. | .. | .. | .. | .. | 43,070 | .. | Unknown |
| Totals, 1929 .. | .. | .. | .. | .. | .. | .. | 52,231 | 1,641 | Unknown |

During the year the Rimu dredge worked for 89 per cent. of the possible dredging time, and turned over 2,055,096 cubic yards of gravel from an average depth of 40 ft. The gold recovered amounted to 9,840 oz., valued at £40,207, a decrease in value of £6,763 compared with the previous year. In 1930 the average value of the ground dredged was 4·67d. per cubic yard, in 1929 it was 5·46d., and in 1928 it was 7·37d.; the dredge is at present working in rather poor ground, but is heading towards an area proved by drilling to contain considerably higher values. The present pontoon is of timber, but in 1931 it will be replaced by a steel one, and when the change is being made the opportunity will be taken of renewing other parts of the dredge.

The Golden Terrace dredge on the Shotover River started towards the end of the year. It did not operate satisfactorily, and since then several alterations and adjustments have been made, and the operation is now better.

### (3) Alluvial Mining.

The following is a statement showing the value of production and dividends declared from alluvial gold-mines during 1930 :—

| Name of Company. | Estimated Value of Gold produced. | Dividends declared. | |
|---|---|---|---|
| | | During 1930. | Total to End of 1930. |
| | £ | £ | £ |
| Kildare Gold-mining Co. .. .. .. .. | 1,576 | .. | .. |
| A. and G. Brown .. .. .. .. .. | 724 | .. | .. |
| Gabriel's Gully Sluicing Co. .. .. .. .. | 2,196 | 160 | 20,375 |
| W. R. Smyth .. .. .. .. .. .. | 696 | .. | .. |
| Sailor's Gully Sluicing Co. .. .. .. .. | 1,736 | 105 | 9,515 |
| Graham and party .. .. .. .. .. | 477 | .. | .. |
| Big Beach Gold-mining Co. .. .. .. .. | 2,338 | .. | .. |
| Moonlight Mining Syndicate .. .. .. .. | 1,271 | 540 | 660 |
| Nokomai Sluicing Co. .. .. .. .. .. | 2,288 | .. | .. |
| Paddy's Point Gold-mining Co. .. .. .. .. | 1,738 | .. | .. |
| Five-mile Beach Gold-dredging Co. .. .. .. | 1,810 | .. | .. |
| A. E. Smith .. .. .. .. .. .. | 981 | .. | .. |
| Tallaburn Sluicing Co. .. .. .. .. .. | 938 | .. | .. |
| Hohonu Sluicing Co. .. .. .. .. .. | 1,178 | .. | .. |
| Stubbs and Steel .. .. .. .. .. | 736 | .. | .. |
| Mutch Bros. .. .. .. .. .. .. | 574 | .. | .. |
| Murchison Bros. .. .. .. .. .. | 425 | .. | .. |
| R. H. Parker .. .. .. .. .. .. | 232 | .. | .. |
| Hawk Mining Syndicate .. .. .. .. | 141 | .. | .. |
| Copeland and party .. .. .. .. .. | 562 | .. | .. |
| Winding Creek Gold-mining Co., Ltd. .. .. .. | 329 | .. | .. |
| H. M. Quilter .. .. .. .. .. .. | 528 | .. | .. |
| All other claims .. .. .. .. .. .. | 11,593 | .. | .. |
| Totals .. .. .. | 35,067 | 805 | Unknown. |

## V. MINERALS OTHER THAN GOLD.

### Iron.

The Onakaka ironworks resumed operations early in the year. During the period the works were closed down a pipemaking plant was installed, and all sizes of cast-iron pipes, suitable for water-mains, can now be produced. The furnace produced 8,075 tons of pig iron, valued at £5 per ton.

### Sulphur.

From the deposits on White Island 3,031 tons of crude sulphur and 25 tons of retorted sulphur were produced during the year.

### Quicksilver.

The works at Ngawha Springs, North Auckland, owned by the Kaitoke Development, Ltd., started operating about the middle of the year. The plant did not treat the ore satisfactorily, and various alterations had to be made. Four thousand and forty pounds of quicksilver, valued at £1,080, was produced during the year.

### Petroleum.

With the new rotary drilling-plant the Taranaki Oilfields, Ltd., resumed drilling in Gisborne No. 2 well, and got down to 3,910 ft. in badly caving ground. At that depth the well was abandoned and the plant shifted to a new well, Waitangi No. 1, which at the end of the year had reached a depth of 373 ft.

Serious difficulties were encountered by the Blenheim Oil Well Reclamation Co., Ltd., in their No. 2 well through caving ground and lost tools ; at the end of the year the depth reached was 2,096 ft.

The Omata No. 1 well, put down by Coal Oil (New Zealand), Ltd., reached a depth of 2,917 ft. without getting more than slight shows of oil.

The Moturoa Oil Fields, Ltd., started drilling in March, and in November their No. 1 Moturoa well had reached a depth of 3,310 ft. A good oil-sand was supposed to exist between 3,000 ft. and 3,300 ft., but when the well failed to strike any show of oil at that horizon it was decided to stop drilling and go back and test an oil horizon at 2,600 ft. to 2,700 ft., which had given fair quantities of oil when being drilled through. The tests made of this horizon showed that, with pumping, the well would probably yield fifteen to twenty barrels of oil per day.

The New Plymouth Oil Wells, Ltd., started drilling in December, and by the end of the year the well was down 280 ft.

The Whanga Petroleum Prospecting and Development Company, Ltd., commenced drilling in the month of March, and by August the well had reached a depth of 640 ft. Difficulty was experienced with fine-running sand, resulting in operations being suspended.

The New Zealand Oil Syndicate made desultory efforts to deepen its No. 2 well at Whangamomona below the 1,230 ft. mark, and by the end of the year a depth of 1,340 ft. only had been reached.

## VI. STONE-QUARRY INSPECTION AND STATISTICS.

By section 2 of the Stone-quarries Amendment Act, 1920, the application of the Act was extended to include every place, not being a mine, in which persons work in quarrying stone and any part of which has a face more than 15 ft. deep, and also in any tunnel in the construction of which explosives are used. The Act, however, does not apply to any Government operations, or any road or railway cutting, or excavations for buildings.

The following is a table showing the number of quarries under the Stone-quarries Act, also the number of persons ordinarily employed thereat, and the annual output and value of crude stone during 1930:—

| Provincial District. | Name and Address of Government Inspector of Stone-quarries. | Number of Working Quarries under the Act. | Number of Persons ordinarily employed. | Output of Stone. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Stone or Gravel for Macadamizing or Ballast. | Stone for Harbour-works. | Building or Monumental Stone. | Limestone for Agriculture. | Limestone for Cement or Mortar. | Phosphate for Agriculture. | Miscellaneous. | Value at Quarry. |
| | | | | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. | £ |
| Auckland .. | James Newton, Mines Dept., Auckland | 165 | 872 | 532,114 | .. | .. | 55,007 | 214,175 | .. | 6,321 | 167,760 |
| | J. F. Downey, Mines Dept., Waihi (Hauraki Mining District only) | 14 | 99 | 92,196 | .. | 2,002 | .. | .. | .. | .. | 31,167 |
| Hawke's Bay | James Newton, Mines Dept., Auckland | 27 | 152 | 37,462 | 10,175 | .. | 15,090 | .. | .. | .. | 10,650 |
| Taranaki .. | Ditto .. .. | 10 | 45 | 16,080 | 633 | .. | 3,441 | .. | .. | .. | 5,831 |
| Wellington | „ .. .. | 44 | 227 | 162,344 | .. | .. | 12,695 | 680 | .. | 20,000 | 44,788 |
| Nelson .. Westland .. Marlborough | E. J. Scoble, Mines Dept., Reefton | 14 | 138 | 10,505 | 24,347 | 74 | 5,684 | 35,189 | .. | 4,883 | 19,040 |
| Canterbury Otago .. Southland .. | T. McMillan, Mines Dept., Dunedin | 44 | 425 | 256,332 | 91,494 | 1,620 | 112,894 | 49,804 | .. | .. | 134,055 |
| Totals, 1930 | .. | 318 | 1,958 | 1,107,033 | 126,649 | 3,696 | 204,811 | 299,848 | .. | 31,204 | 413,291 |
| Totals, 1929 | .. | 293 | 2,130 | 1,087,294 | 110,348 | 7,502 | 221,756 | 322,986 | .. | 11,408 | 479,199 |

There were 172 fewer men employed than during the previous year, and a decrease in the value of the stone produced of £65,908.

### Quarry Accidents.

The following is a summary of serious accidents during 1930 at quarries under the Stone-quarries Act:—

| Cause. | Number of Accidents. | | Number of Sufferers. | |
|---|---|---|---|---|
| | Fatal. | Serious. | Killed. | Seriously injured. |
| Haulage .. .. .. .. .. .. | .. | 1 | .. | 1 |
| Machinery .. .. .. .. .. .. | .. | .. | .. | .. |
| Explosives .. .. .. .. .. .. | .. | 2 | .. | 2 |
| Falls of ground .. .. .. .. .. .. | 1 | 3 | 1 | 3 |
| Miscellaneous .. .. .. .. .. .. | .. | 1 | .. | 1 |
| Totals .. .. .. .. .. | 1 | 7 | 1 | 7 |

Accounts of the accidents are given in the District Inspectors' reports attached hereto.

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## VII. STATE AID TO MINING.

### (1) Subsidized Prospecting.

Upon subsidized prospecting operations 245 persons were intermittently employed during the year. This number includes seventy-three persons prospecting under subsidies granted out of the Unemployment Fund.

The following is a statement showing the results of prospecting operations as reported by the Inspectors of Mines:—

| Name of Prospecting Party. | Number of Prospectors. | Locality of Operations. | Amount of Subsidy granted.* | Amount of Subsidy expended. | Distance driven or sunk. | Nature of Claim. | Character of Operations. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| *Northern Inspection District.* | | | £ s. d. | £ s. d. | Ft. | | | |
| Muir's Gold-reefs | .. | Muir's Reefs | 1,743 19 10 | 7 5 2 | .. | Quartz | .. | .. |
| C. and W. Campbell | 2 | Thames | 22 2 0 | 22 2 0 | 51 | ,, | Driving | Gold-bearing reef driven on; not payable. |
| Caledonia - Kuranui - Moanataiari Gold-mining Co. | 5 | ,, | 105 0 0 | 78 15 0 | 150 | ,, | ,, | Payable reef developed. |
| Lloyd and Whitehead | 3 | ,, | 11 12 11 | 6 5 10 | 9½ | ,, | Sinking | Nothing of value found. |
| A. F. Sawyer | 2 | ,, | 26 5 0 | 26 5 0 | 50 | ,, | Driving | Gold-bearing leader driven on. |
| Hauraki Consolidated | 5 | Coromandel | 1,250 0 0 | 100 0 0 | 50 | ,, | Driving and winzing | Nothing of value found. |
| H. and J. McKenzie | 2 | Mahakarau | 55 16 4 | 34 16 4 | 74 | ,, | Driving | ,, |
| Madill and Fremlin | 2 | Coromandel | 19 1 4 | 19 1 4 | 44 | ,, | ,, | Small gold-bearing leader. |
| Turner and Evans | 2 | Port Charles | 50 14 0 | 21 9 0 | .. | ,, | Prospecting | Work in progress. |
| J. McNeil and Son | 2 | Tokatea | 210 0 0 | 147 0 0 | 280 | ,, | Driving | Several gold-bearing reefs opened up. |
| Maoriland Consolidated | 2 | Waitekauri | 150 0 0 | 105 6 1 | .. | ,, | ,, | Nothing of value found. |
| Ruahine Copper Syndicate | 9 | Maharahara | 125 0 0 | 125 0 0 | .. | Copper | Geophysical prospecting | ,, |
| Boswell and Todd | 2 | Tokatea | 52 10 0 | 12 1 6 | 23 | Quartz | Driving | Work in progress. |
| McNeil Bros. | 4 | Coromandel | 160 18 0 | 23 7 0 | 38 | ,, | ,, | ,, |
| Talisman Dubbo Co. | 2 | Karangahake | 210 0 0 | 210 0 0 | 400 | ,, | ,, | Gold-bearing reef driven on. |
| A. J. Joyce | 2 | Thames | 26 10 0 | .. | .. | ,, | Sinking | Work in progress. |
| H. A. Plummer | 2 | ,, | 52 10 0 | 45 8 3 | 86½ | ,, | Driving | Nothing of value found. |
| G. Cosgrove | 2 | ,, | 52 10 0 | 52 10 0 | 100 | ,, | ,, | ,, |
| A. J. Whiteside | 2 | ,, | 87 12 0 | 40 7 0 | 10 | ,, | Prospecting and driving | Nothing of value found; work in progress. |
| A. W. Jensen | 2 | ,, | 52 10 0 | 37 16 0 | 72 | ,, | Driving | Nothing of value found. |
| R. F. Harwood | 2 | ,, | 52 10 0 | 49 7 0 | 94 | ,, | ,, | Gold-bearing leader found. |
| Thames Low-grade Ore Development Syndicate | 3 | Neavesville | 200 0 0 | 200 0 0 | .. | ,, | Prospecting | Large body gold-bearing material tested. |
| G. H. Keene | 2 | Coromandel | 55 10 0 | 31 7 0 | 54 | ,, | Driving | Work in progress. |
| Waiotahi Gold-mining Co. | 2 | Thames | 26 5 0 | 26 5 0 | 50 | ,, | ,, | Nothing of value found. |
| Waihi Prospecting and Mining Association | 2 | Owharoa | 60 0 0 | .. | .. | ,, | Prospecting | Work not yet started. |
| *West Coast Inspection District.* | | | | | | | | |
| F. Ball and W. Harris | 2 | Wangapeka | 50 14 0 | .. | .. | .. | Prospecting | .. |
| Blackwater Mines, Ltd. | .. | Waiuta | 175 0 0 | .. | .. | Quartz | Development | .. |
| A. T. Blair | 2 | Capleston | 19 11 8 | .. | .. | ,, | Prospecting | Work in progress. |
| G. Boyd and party | 4 | Anatoki | 126 15 0 | 15 12 0 | .. | Alluvial | ,, | ,, |
| Collins and Hayward | 2 | Wairau Valley | 50 14 0 | .. | .. | .. | ,, | ,, |
| Chaffey and Forman | 2 | Grecian Creek | 50 14 0 | 35 2 0 | .. | .. | ,, | ,, |
| Davies and Hart | 2 | Wairau Valley | 152 2 0 | 136 10 0 | .. | Alluvial | ,, | ,, |
| Dominion Prospecting Syndicate | 3 | Pelorus Sound | 50 0 0 | .. | .. | Quartz | ,, | ,, |
| Forrester and party | 2 | Murchison | 50 14 0 | .. | .. | Alluvial | ,, | ,, |
| J. Guy and party | 3 | Taipo | 156 13 6 | 141 0 0 | .. | Quartz | ,, | ,, |
| Harrison and Absalom | 2 | Hukawai | 98 0 0 | 98 0 0 | 200 | ,, | ,, | Reef proved. |
| Hohonu Sluicing Co. | 6 | Kumara | 165 0 0 | 165 0 0 | .. | Alluvial | Development | Earthquake repairs. |
| Haines and Gaily | 2 | Baton | 46 16 0 | 11 14 0 | .. | ,, | Prospecting | Work suspended. |
| H. Hughes and party | 2 | Aorere | 31 4 0 | 31 4 0 | .. | ,, | ,, | Nothing of value found. |
| Mahakipawa Goldfields, Ltd. | .. | Mahakipawa | 200 0 0 | .. | .. | ,, | Driving and crosscutting | .. |
| McQuilkin and Feeney | 2 | Blue Spur | 5 16 8 | 2 11 8 | 10 | ,, | Sinking | Unsatisfactory. |
| H. Neilson and party | 2 | Deep Creek | 50 0 0 | 20 0 0 | 60 | Quartz | Prospecting | Work in progress. |
| H. Phillips | 2 | Ross | 48 19 2 | .. | .. | ,, | ,, | ,, |
| J. Roberts | 2 | Rutherglen | 38 6 8 | 4 15 10 | 50 | Alluvial | ,, | Satisfactory. |
| Rodden and party | 3 | Waimangaroa | 120 0 0 | 69 11 8 | 200 | Quartz | ,, | Nothing of value found. |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Robinson and Wheeler | 2 | Okoura | 50 14 0 | .. | .. | Alluvial | Prospecting | | .. |
| R. Stewart and party | 2 | Blue Spur | 50 0 0 | 22 10 0 | .. | ,, | Tail-race | | .. |
| J. F. W. Sixtus | 2 | Canaan | 50 14 0 | .. | .. | ,, | Prospecting | | Work in progress. |
| Westland Prospecting Syndicate | 4 | Arahura | 190 8 0 | 27 9 5 | .. | ,, | Boring | | Satisfactory. |
| Willis and Clark | 2 | Reefton | 50 14 0 | 50 14 0 | .. | Quartz | Prospecting | | Nothing of value found. |
| E. McKenzie | 2 | Wakamarina | 46 8 0 | .. | .. | .. | ,, | | .. |
| K. Ross and party | .. | Collingwood | 66 10 0 | .. | .. | Alluvial | Diversion tunnel | | Work suspended. |
| New Big River Gold-mining Co. | .. | Reefton | 1,500 0 0 | .. | .. | Quartz | Development | | .. |
| *Southern Inspection District.* | | | | | | | | | |
| Golden Crescent Sluicing Co. | 4 | Lawrence | 550 12 8 | 423 8 5 | 192 | Cement | Driving | | .. |
| John Stevenson | 4 | Nevis | 500 0 0 | 464 0 0 | 616 | Alluvial | Boring | | Prospects encouraging. |
| Golden Progress | 12 | Oturehua | 352 10 0 | 303 15 0 | 120 | Quartz | Sinking | | Prospects very encouraging. |
| Aitken and partner | 2 | Clyde | 9 11 8 | .. | .. | .. | .. | | Work in progress. |
| A. F. Wilson | 2 | Mataura River | 60 0 0 | .. | .. | .. | .. | | ,, |
| Cornish Point Mining Syndicate | 7 | Cromwell | 250 0 0 | 100 0 0 | 160 | Alluvial | Driving | | Work not completed. |
| McIntosh and Lowe | 2 | Waikaia | 15 16 3 | 4 13 5 | 39 | ,, | Sinking | | Work in progress. |
| King Solomon Deep Leads | 10 | ,, | 220 0 0 | 208 5 4 | 152 | ,, | Driving | | Prospects very encouraging. |
| Magnus and Walker | 2 | Alexandra | 23 8 0 | .. | .. | ,, | .. | | Work in progress. |
| Pettigrew and party | 3 | Nenthorn | 87 15 0 | 23 8 0 | .. | Alluvial and reef | .. | | Nothing payable found. |

## SUBSIDIES GRANTED OUT OF MONEYS PROVIDED BY UNEMPLOYMENT BOARD.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Northern Inspection District.* | | | | | | | | | |
| A. W. Jensen | 2 | Thames | 26 5 0 | .. | .. | Quartz | Driving | | Work not yet started. |
| Caledonia - Kuranui - Moanataiari Gold-mining Co. | 4 | ,, | 101 8 0 | .. | .. | ,, | ,, | | ,, |
| F. McGuiness | 2 | Coromandel | 46 16 0 | .. | .. | ,, | Prospecting | | ,, |
| Golden Dawn Gold-mining Co. | 8 | Owharoa | 202 16 0 | .. | .. | ,, | Driving, &c. | | ,, |
| Jupiter Syndicate | 7 | Tokatea | 259 7 0 | .. | .. | ,, | Crosscutting | | ,, |
| Nichol and mate | 2 | Maratoto | 50 14 0 | .. | .. | ,, | Driving | | ,, |
| A. F. Sawyer | 2 | Thames | 62 10 0 | .. | .. | ,, | ,, | | ,, |
| Rhodes and Fremlin | 2 | Coromandel | 50 14 0 | .. | .. | ,, | Prospecting | | ,, |
| *West Coast Inspection District.* | | | | | | | | | |
| Hart and McKay | 2 | Lyell | 50 14 0 | .. | .. | Quartz | Prospecting | | Work in progress. |
| McIntosh and Hitchins | 2 | Moonlight | 50 14 0 | .. | .. | Alluvial | ,, | | ,, |
| McCarthy and party | 4 | Howard | 101 8 0 | .. | .. | ,, | ,, | | .. |
| A. Neilson and W. Seymour | 2 | Wakamarina | 50 14 0 | .. | .. | ,, | ,, | | Work in progress. |
| Penrose and Straughn | 2 | Big River | 50 14 0 | .. | .. | .. | ,, | | .. |
| H. G. Royds and party | 3 | Rotoroa | 46 16 0 | .. | .. | Alluvial | ,, | | .. |
| Seymour and Eklund | 2 | Larry Creek | 50 14 0 | .. | .. | .. | ,, | | .. |
| White and Pritchard | 2 | Hokitika River | 50 14 0 | .. | .. | Alluvial | ,, | | .. |
| *Southern Inspection District.* | | | | | | | | | |
| H. Sew Hoy | 3 | Queenstown | 29 5 0 | .. | .. | Alluvial | .. | | Work in progress. |
| West and party | 5 | West Coast Sounds | 253 10 0 | .. | .. | Alluvial and reef | .. | | Work not started. |
| Pascoe and party | 2 | Macetown | 15 12 0 | .. | .. | Quartz | .. | | Work in progress. |
| Tully and partner | 2 | Cromwell | 4 15 10 | .. | .. | Alluvial | .. | | No work done. |
| Paulin and partners | 5 | Dart River | 117 0 0 | .. | .. | ,, | .. | | Work not started. |
| P. J. Brown and partner | 2 | Mount Ida | 39 0 0 | .. | .. | ,, | .. | | Work in progress. |
| F. Moore and party | 6 | Preservation Inlet | 152 2 0 | .. | .. | Reef | .. | | .. |
| | 245 | | .. | 3,780 19 3 | | | | | |

* Includes authorizations in previous years. The total of the subsidies granted during the year ended 31st March, 1931, amounted to £4,755 7s. 9d.

(2) Government Prospecting Drills.

The following table gives details of the drilling done and the results obtained for twelve months ended 31st December, 1930 :—

Drill Superintendents : W. H. Warburton, E. Wilson, R. Pengelly, and W. H. Gibson.

Drills used : Diamond and Keystone drills.

| Number of Holes drilled. | Total Depth, in Feet. | Diameter of Hole. | Mineral sought. | Character of Rocks drilled through. | To whom lent. | Cost per Foot of Drilling. | Cost per Foot of Transport. | Cost per Foot of Carbon's Wear. | Results. |
|---|---|---|---|---|---|---|---|---|---|
| | Ft. | In. | | | | s. d. | s. d. | s. d. | |
| 2 | 415 | $1\frac{3}{4}$ | Coal | Sandstone, grits, mudstone, and shale | State Coal-mines | 4 3 | 2 5 | 0 2 | Unsatisfactory. |
| 1 | 131 | $1\frac{3}{4}$ | ,, | Ditto .. .. | Baddeley and party | 8 4 | 2 6 | 1 1 | ,, |
| 13 | 2,559 | $2\frac{3}{8}$ and $1\frac{3}{4}$ | ,, | Sandstone, shale, &c. | Westport Coal Co. | 4 3 | 1 10 | 1 $0\frac{1}{2}$ | Satisfactory. Work still in progress. |
| 12 | 1,087 | $1\frac{15}{16}$ | ,, | Ditto .. .. | Charming Creek–Westport Coal Co. | 6s. | $1\frac{1}{2}$d. | 0 8 | .. |
| 7 | 540 | $1\frac{3}{16}$ | ,, | ,, .. .. | Westport-Stockton Coal Co. | .. | .. | .. | In progress. |
| 26 | 928 | 6 | Gold | Clay and gravels | J. Stevenson .. | 22 6 | 1 5 | .. | .. |
| 7 | 378 | 6 | * | Shingle .. | Public Works Department | 15 7 | 10 $5\frac{3}{4}$ | .. | .. |
| 68 | 6,038 | | | | | | | | |

* Testing for foundations, Buller River Bridge.

(3) Subsidized Roads on Goldfields.

The expenditure in the form of subsidies and direct grants upon roads on goldfields amounted to £5,381, as compared with £2,816 during the previous year.

I desire again to acknowledge the efficient help and co-operation which I have received during the year from the District Inspectors of Mines.

I have, &c.,
J. A. C. Bayne,
Inspecting Engineer of Mines.

# ANNEXURE A.

## SUMMARY OF REPORTS BY INSPECTORS OF MINES.

### NORTHERN INSPECTION DISTRICT (J. F. Downey, Inspector of Mines).

#### Quartz-mining.

*Waihi Gold-mining Co., Ltd.* (J. L. Gilmour, Manager).—The following is a summary of the operations carried out :—

Shafts : No shaft sinking was done, but all the working shafts were kept in good order.

No. 15 level (1,880½ ft. below collar of No. 4 shaft) : No further exploration work was done, but the trucking of ore from Cow block was continued. The block now contains 2,082 tons of broken ore.

No. 14 level (1,752 ft.) : Some further investigation of the ground below No. 14 level under what is known as Cod block was carried out. A winze was sunk a distance of 80½ ft., and it is intended to deepen this, and connect with a rise from No. 15 level. The lode was crosscut at 60 ft. down in the winze, and was found to be 66 ft. wide. On being sampled in successive sections, measured from the eastern wall, the values were found to be 0 ft. to 5 ft., 5s. 5d. per ton ; 5 ft. to 27 ft., £1 9s. 10d. ; 27 ft. to 42 ft., 9s. 3d. ; 42 ft. to 57 ft. £1 12s. 10d. ; and 57 ft. to 66 ft., 2s. 3d. ; the average of all the assays being £1 0s. 1d. Investigation of the lode is being continued.

On the Edward lode at this level shrinkage stoping of the big low-grade Trout block was continued, and at the end of the year the stope was up 111 ft. Truck samples of the ore drawn off ranged from 17s. 5d. per ton to £1 12s. 2d. per ton, with an average of £1 3s. The stoped part of the block is estimated to contain 11,769 tons of ore of this average value. The average value being low, this ore was taken out of the mine's General Account Reserve, but with the mine and battery in full operation it is considered, however, it will pay to send it to the battery, as it will pay its own mining and treatment costs, and contribute something to the general standing cost.

No. 13 level (1,578½ ft. below collar of No. 4 shaft)—Martha lode : An extensive investigation was made of the ground south of the north section of the Martha lode and lying to the east of No. 4 shaft main north crosscut. The crosscut across the north section at 100 ft. east was extended in a south-easterly direction, the total distance driven being 228½ ft. measured from the south side of the level on the north section. At 215 ft. the crosscut entered a layer of bedded tuff which continued to the end. At 73 ft. in the crosscut the Martha lode was intersected, and proved to be 58½ ft. in width, comprising the following sections : 0 ft. to 49 ft., quartz and country mixed, of little value ; 49 ft. to 53 ft., quartz assaying 7s. 1d. per ton ; 53 ft. to 58½ ft., quartz carrying zinc and lead sulphides, the assays of this section showing average values to be £3 5s. per ton. This payable section was followed eastward a distance of 55 ft. Up to 30 ft. east samples from it assayed well, values ranging from £1 17s. 8d. per ton to £2 19s. 9d. At this point the values fell away, and the drive terminated in hard, glassy quartz, which was considered to represent the main body of the Martha lode. Driving was carried out westward on what was apparently the downward continuation of the Dreadnought lode, junctioning with the Martha lode at this point. The reef proved to be small, and the value declined from 17 ft. west. At 93 ft. crosscuts were put out, 12 ft. to the north and 11 ft. to the south, but nothing of importance was disclosed. The drive eastward and westward of Williams crosscut was heightened, but the sulphide seam became reduced in size, and work was stopped. Dreadnought lode : In connection with the investigation of the same area, a drive was put out in a south-easterly direction across the course of the Dreadnought lode, starting from a point 239 ft. north in No. 4 shaft north crosscut. A total of 70 ft. was driven through a mixture of quartz and country rock, but nothing of importance was met with.

No. 12 level (1,447½ ft. below collar of No. 4 shaft) : Operations were confined to the stoping of Andrewartha block on the Empire lode, and trucking from Manning block on the south branch of the Dreadnought lode.

No. 11 level (1,301 ft. below collar of No. 5 shaft)—Martha lode : With a view to searching for the downward continuation of the run of sulphide ore found east and west of Boundary reef crosscut at No. 10 level, Brooke's north crosscut, which at No. 11 level is just west of the eastern boundary, was extended across the Martha lode. Measuring from the centre section of the Empire lode, the crosscut was extended from 125 ft. to 167½ ft. At 143 ft. the Martha lode was met, and was found to be 23 ft. in width. The north wall was seen, and the crosscut penetrated 1½ ft. into soft slidy country, when the crosscutting was stopped. Assays of the lode only gave from traces up to 2s. per ton. Starting at 133 ft. north on the south part of the lode, a drive was put out west for 80½ ft. There were some indications of values at the starting-point, but, with the exception of occasional small sulphide leaders seen on the south wall, the quartz where driven on proved of low value. At 54 ft. west the lode was crosscut, and assays ranged from 2s. 5d. to 12s. 8d. per ton. Empire lode : With a view to searching for the downward continuation of a run of sulphide ore opened up at No. 10 level on the footwall of the Empire, east and west of London south-east crosscut, a footwall drive was started in Bath north-west crosscut, at about 30 ft. south of the Empire lode. This drive started in country rock, but at 130 ft. west was turned towards the north-west and at 168½ ft. was connected with the level on the north part of the Empire lode. Starting at the 160 ft. mark in the footwall drive, a drive was extended westward on the south part of the Empire lode a distance of 145 ft. No ore of any importance was met with. The quartz was leached in places. At 142 ft. a crosscut to the north for 70½ ft. passed through the following formations : 0 ft. to 27 ft., country rock ; 27 ft. to 32 ft., old level on Empire lode ; 32 ft. to 44 ft., mixture of quartz and country of low value ; 44 ft. to 49 ft., quartz, with some country, assaying 19s. 4d. per ton ; 49 ft. to 54 ft., quartz and sulphides ; 54 ft. to 70½ ft., mostly country rock. The make of ore between the 49 ft. and 54 ft. marks was investigated by driving westward on it for 130 ft., when the reef split up. At 125 ft. a crosscut put out to the north disclosed bedded carbonaceous tuff. The section was also driven on eastward for 151 ft. The above work disclosed a run of ore about 5 ft. wide, extending from 83 ft. west of the crosscut to 83 ft. east of it, of an average value of £1 5s. 6d. per ton. It was considered this ore would pay to stope, and that it would increase in value as work was extended upwards. Edward lode : Trucking from the Salmon block at this level continued till the 8th September, a considerable excess above the estimated quantity of broken ore available having then been obtained. On that date a heavy fall of rock occurred in the south end of the nearly empty stope, breaking several timbers in No. 11 level. An examination indicated weakening in the arch under No. 10 level, and the men were withdrawn from the working, and trucking from it was stopped. The timbers at No. 11 level were subsequently renewed and re-enforced with extra sets. A deviation gangway was started at No. 10 level past the dangerous ground to allow operations in the southern part of the Edward lode to be continued.

No. 10 level (1,152 ft. below collar of No. 5 shaft)—Martha lode : In the report for last year details were given of an investigation of the hanging-wall of the Martha, just within the eastern boundary of the Waihi Co.'s ground, and east and west of the Boundary reef crosscut. This work was continued, and a valuable stoping-block, known as Brook's block, was opened up. The length of the stope is 160 ft., and the average width of the ore at No. 10 level is 10 ft., while the average value of the samples taken during the heightening was £2 5s. 7d. per ton. As mentioned above, under the heading "No. 11 level," an investigation of the ground below this block on No. 11 level was carried out, but the make of ore evidently did not live down to that level. A rise from No. 10 level on the block, situated at 23 ft. west of Boundary reef, disclosed good ore for a height of 80 ft. The drive at No. 10 level was extended eastward into Grand Junction Co.'s property. It crossed the boundary at 90 ft. east of the Boundary reef crosscut, and was

carried to a point 156 ft. east of that crosscut. At about 50 ft. east of the crosscut the ore-body started to split up, and did not live eastward of that. At 100 ft. east of the Boundary reef crosscut, or 10 ft. within the Grand Junction Co.'s area, a crosscut was put out northward across the main body of the Martha lode. The full length of this crosscut was 76½ ft., measured from the south wall of the lode. The first 25 ft. was calcite, and from 25 ft. to 70 ft. a mixture of quartz and country rock of low value. Empire lode, south part: Investigation of the run of sulphide ore on the footwall of the lode intersected in the extension of London south-east crosscut just west of No. 4 shaft main north crosscut was continued. A drive was extended eastward from London south-east crosscut to a total distance of 89½ ft. and connected to an old drive on this part of the reef. Ore of good grade was exposed throughout. The western drive was extended to a total distance of 221 ft. in good-grade ore and connected to an old stope on the main part of the Empire load. For the first 150 ft. of driving the ore-body was the full width of the drive, but westward became smaller, though still assaying well. A stoping block, known as Furze block, 225 ft. in length and extending from 140 ft. west of London south-east crosscut to 85 ft. east, has been opened up on the above ore. It is estimated to contain 24,912 tons, of an average value of £1 9s. 7d. per ton. At the end of the year this stope had been carried up 41 ft.

No. 9 level (1,000 ft. below collar of No. 5 shaft).—Martha lode: An extensive investigation of the hanging-wall of this lode was carried out in the neighbourhood of the Waihi Co.'s eastern boundary and also in Grand Junction Co.'s property, and is being continued. The results have been very encouraging. The locality of the investigation was immediately over the run of sulphide ore opened up in Waihi Co.'s ground at No. 10 level and now being stoped as Brook's block. The south crosscut from the Martha lode at 440 ft. east of No. 6 shaft south crosscut at No. 9 level was extended to a total distance of 51 ft. Sulphide ore of payable value was intersected between the 22 ft. and 26 ft. marks. Up to the end of the year a drive had been carried eastward on this make of ore a total distance of 409 ft. The drive crossed the boundary at 112 ft. east. Samples from the first 69 ft. of driving were low grade, but from the 69 ft. mark to 282 ft. east the values were consistently good, the assays giving results ranging from £1 1s. 6d. to £3 per ton for the width of the drive. There was a poor stretch between 282 ft. and 339 ft., but from 339 ft. to 409 ft. assays ranged from £1 15s. 9d. to £2 9s. 3d. per ton. A crosscut at 410 ft. showed a width of 12 ft., assaying £2 9s. 6d. per ton. The drive is still in good ore. The work done indicates a substantial quantity of payable ore to be won from this area. Driving eastward is being continued.

No. 8 level, 60 ft. sub-level.—Edward lode, West Section: The 60 ft. sub-level was extended southward in good ore to 185½ ft. south of Sprat west wall pass. The reef then narrowed to 2½ ft., and was of low value, and driving was stopped. A considerable amount of work was carried out above this sub-level, and stoping of two blocks known as the Perchson and Tubman blocks was in operation on high-grade ore. This section of the Edward lode is dipping flatly towards the west.

No. 8 level, 48 ft. sub-level—Martha lode: Operating from the southern end of Peach block at a point 48 ft. below No. 8 level a crosscut was put out to the Martha lode in country rock, and a further test of the lode was made in this western area. The total width of quartz and mixture was 45 ft., of which 5 ft. on the south wall was sulphide ore assaying £2 13s. 8d. per ton, the balance being low grade, averaging only 7s. 6d. per ton. The make of ore on the south wall will be further investigated.

No. 8 level—Martha lode: An investigation of the Martha lode above the run of sulphide ore opened up on the hanging-wall of the lode at No. 9 level near Waihi Co.'s eastern boundary was in progress, but up to the end of the year there was no development of importance. Martha lode—arches, &c.: The eastern portion of the Martha lode between Nos. 8 and 7 levels supplied a large tonnage of ore throughout the year from arches and caved sections. Operations are being conducted from four sub-levels. North section of Empire lode: With a view to further investigation of the ground above Leather block on the north section of the Empire, the drive eastward from Alexandra east crosscut was extended to 166½ ft. At 116 ft. east crosscuts were put out, 7 ft. to the north and 22 ft. to the south, and, at 162 ft., 5½ ft. to the south and 78½ ft. to the north. So far these crosscuts have disclosed only leaders of low grade. Dreadnought lode: To further test the ground south of the Empire lode in the eastern part of the company's property, and particularly the Dreadnought lode, driving was started eastward along the Empire lode from the Alexandra east crosscut, and at 55 ft. east of Snape winze crosscut 100 ft. to the south across the line of the Dreadnought lode. A borehole was also started at 70 ft. east of the main north-west crosscut. This bore disclosed 8 ft. of quartz on the line of the lode. At 100 ft. south in Snape crosscut, as measured from the south wall of the Empire lode, the Dreadnought lode was met with, and was tested for 8 ft. eastward and 39 ft. westward. There was one promising assay at 8 ft. west, but westward from this point the reef decreased in both width and value, and driving was stopped. The country to the east was further tested by a crosscut from the Dreadnought lode at 34 ft. west, but it penetrated light-grey andesite of unfavourable nature, and crosscutting was stopped at 58½ ft.

No. 7 level—Martha lode: Longson's crosscut opposite No. 1 shaft was extended across the Martha a total distance of 160½ ft. and connected by a short drive westward to No. 1 shaft, where the latter had collapsed. A caving block was opened up east and west of this crosscut, and is supplying ore of good grade. Good-grade ore was also won by caving east and west of Longson pass at No. 6 level, 120 ft. sub-level.

No. 6 level: Operations were confined almost entirely to stoping and trucking. An investigation of a section of No. 2 reef was, however, carried out by a crosscut from the north branch of the Martha lode at 132 ft. east of Wheel north crosscut. At the end of the year the crosscut was in country rock.

No. 5 level—Martha lode, north branch: The investigation of a length of this lode situated at 350 ft. north of No. 2 shaft, commenced last year, was continued. A drive was extended westward from Taylor's north crosscut, situated at 85 ft. east of No. 2 shaft north-west crosscut, for a total distance of 186 ft., passing along the north of a rich make of ore worked some years ago. At 150 ft. west a crosscut was put out to the south which connected with these old workings. A leader that was followed proved to be small and generally low grade, with occasional good assays. An eastward drive was extended from 74 ft. to 172 ft. For a distance of 132 ft. east of the crosscut there was a width of from 2 ft. to 5 ft. of ore of good average grade, with occasional rich patches, but eastward from this assays were low, and between the 157 ft. and 172 ft. marks only a trace of quartz was seen. Taylor's north crosscut was then extended to 38½ ft. north, and between the 33 ft. and 36½ ft. marks a make of sulphide ore of good grade was passed through. A stoping-block east and west of Taylor's crosscut, and including the main north branch and a loop on the north side, was opened up. The block is about 150 ft. in length and 10 ft. in width at No. 5 level. Truck samples show a value of £1 17s. per ton. The north branch of the Martha lode, east of No. 1 filling-pass, was also driven on eastward from the filling-pass for a total distance of 245 ft., driving being stopped close to the west end of the empty Whiteson block. The lode proved to be small, only ranging from 1½ ft. to 4 ft. in width, but it was of good value, and a good deal of ore was won from it. A stope will probably be opened up on this section. At 203 ft. east a crosscut was put out to the north for 71 ft. and connected with old workings on No. 2 reef. Between the 41 ft. and 48½ ft. marks 7 ft. of ore, assaying £2 10s. 6d. per ton, was passed through. This ore was followed westward 68½ ft., and eastward 17 ft., at which latter distance the drive connected to an empty stope. This reef has been designated "South branch of No. 2," and will be further investigated. At 203 ft. east another crosscut was put out southward for a distance of 24 ft., when it connected with the Martha footwall gangway. Between the 6 ft. and 10 ft. marks in this crosscut 4 ft. of quartz was met with, assaying £1 6s. 4d. per ton. This make of stone was named "Cameron reef." It was driven on westward for 23 ft., and eastward 172 ft., but proved of no commercial value, and was found to consist of small leaders of quartz divided by much country rock.

Surface workings: Ore of good grade was won throughout the year from the Emily block on the Welcome lode, from the Merry Arch block on the Martha lode, and by open-cut working from the south branch of Martha lode east of No. 2 filling-pass crosscut.

Stand-by shaft: Owing to the gradual subsidence at the site of the old No. 1 shaft, due to the extraction of the arches and to caving operations on the Martha lode, the question of equipping a shaft as a stand-by in case of trouble at either No. 2 or No. 6 shafts was given consideration, and it was decided to adapt the Grand Junction main shaft for the purpose, and to run a footwall gangway along the whole length of the Martha lode at Waihi Co.'s No. 10 level, the terminal point at the Grand Junction shaft to be a chamber that would be 35 ft. below Junction No. 6 level or 30 ft. below Waihi Co.'s No. 10 level eastern extension. In connection with this scheme, the Grand Junction shaft has been overhauled, the new chamber excavated and equipped, and a start made to drive north-west towards the Martha. At the end of the year the drive was in 44 ft. At the same time driving of the gangway west from No. 4 shaft north crosscut at No. 10 level was put in hand, and at the end of the year it had been extended a total distance of 465 ft.

Exploration: The exploration and dead-work footage for the year amounted to 10,433 ft., of which 5,945 represented general development, the remainder being work in connection with removal of arches, &c.

The quantity of water raised during the year showed a further falling-off, being only 715 gallons for each minute of the 365 days, as against 813 gallons last year.

Output: A total of 180,749 tons of 2,240 lb. was mined and treated, the tonnage from each lode being as follows: Martha, 46,482·14; Edward, 46,323·21; Empire, 25,731·25; Martha north branch, 13,163·39; Royal, 10,908·92; No. 2 reef, 8,781·24; Dreadnought south branch, 5,190·17; Mary, 4,537·50; Dreadnought, 3,815·17; Alexandra, 3,541·07; Welcome, 2,335·70; Empire north section, 1,933·03; Regina section, 1,635·70; north leader, 1,538·39; North lode, 1,268·75; Martha south branch, 1,129·46; Taylor, 824·10; Cameron, 789·28; Surprise, 556·25; J. lode, 145·53; Dominion, 114·29; Edward west branch, 4·46.

The total value of the bullion was £329,603 9s. 2d. The recovery of gold amounted to 69,824 oz. 11 dwt. 9 gr., valued at £293,263 4s. 2d., and of silver 363,402 oz. 11 dwt. 9 gr., valued at £36,340 5s. The company paid dividends during the year to the amount of £99,181 8s., making the total disbursements to date £5,842,283 2s. 6d. The average number of men employed was 541.

A study of these figures, together with that of the information contained in the foregoing description of the various operations, will serve to show that the position at the mine continues to remain very satisfactory. Development on, and stoping of, the new ore-bodies referred to has again enabled sufficient ore to be won to keep the mill going without calling to more than a very limited extent on the reserves, and the prospects are that for the coming year an equally gratifying result will be forthcoming.

*Grand Junction Gold-mining Co., Ltd.* (J. L. Gilmour, Manager).—The Waihi Co. has throughout the year continued to work this company's area under arrangement. A considerable amount of investigation was carried out on various levels, with results that were very satisfactory. The following is a brief summary of the most important operations:—

Waihi Co.'s No. 11 level (36 ft. below Grand Junction No. 7 level): With a view to further investigation at depth of the Dominion lode, and of the country lying between the Martha and Empire lodes in the Grand Junction Co.'s area, the Waihi Co.'s No. 11 level was extended from 206½ ft. east of McNamara's north crosscut to 343 ft. east. Up to the end of the year the work done disclosed a substantial body of quartz, which was, however, of somewhat low grade, the average between the 216 ft. and 327 ft. marks being 19s. per ton, discounting all abnormally high assays. A crosscut at 244 ft. east showed 17 ft. of quartz, assaying, as sampled from the south wall: 0 ft. to 5 ft., 13s. 4d. per ton; 5 ft. to 10 ft., 10s. 3d.; 10 ft. to 13½ ft., £1 4s. 4d.; 13½ ft. to 17 ft., £2 6s. 3d. This drive is being continued.

Waihi Co.'s No. 10 level—57 ft. sub-level (below Grand Junction No. 6 level)—Dominion lode: During the early part of the year a shrinkage stope, extending from 140 ft. west to 25 ft. east of McNamara winze, was opened up. This is known as McNamara block. A total of 3,135 long tons of ore were mined from it and sent to the mill, the ore being of very good grade. The stope is now up within 11 ft. of Waihi Co.'s No. 10 level, but it is estimated to contain a further 3,363 tons of broken ore. This block is the downward continuation of the Weeks Dominion block above Waihi Co.'s No. 10 level extension.

Waihi Co.'s No. 10 level—30 ft. sub-level: As part of the scheme for using the Grand Junction shaft as a stand-by, a crosscut, started at the new chamber at 35 ft. below Grand Junction No. 6 level, has been extended 44 ft. in a north-westerly direction towards the Martha lode. This crosscut will pass through a belt of country between the Empire and Martha lodes in which it is considered there is a probability of payable ore-bodies being located. A drive is also being put out from the new chamber in a south-easterly direction across the line of the Republic and State reefs.

Waihi Co.'s No. 10 level (about Grand Junction No. 6)—State reef: A very promising run of sulphide ore has been opened up in the Grand Junction ground on the extension of Waihi No. 10 level, which is about 4 ft. below the Grand Junction No. 6 level. Starting at 108 ft. south in Grand Junction main south-east crosscut, the floor of which was cut up to permit of trucking out along Waihi Co.'s No. 10 level extension, a drive was put out eastward on what is known as the State reef for a total distance of 330½ ft. Between the Junction main south-east crosscut and 169 ft. east a run of sulphide ore of good grade was developed, samples taken throughout the driving ranging from £1 1s. to £2 18s. 3d. per ton, while crosscuts disclosed widths varying from 7 ft. to 12 ft. of good ore. Eastward of the 169 ft. mark the reef became much smaller and of no commercial value, and had a very flat dip of 1 in 1 to the north. The drive was being continued, however, with the object of testing the ground further ahead by crosscutting. The same reef was tested westward of the main south-east crosscut for a distance of 14 ft., but the values were low.

State reef—south branch: At 261 ft. east in the drive just mentioned a crosscut was put out to the south for 71 ft. and connected to old workings on the Empire lode. Between 55 ft. and 57½ ft. south in this crosscut there was 2½ ft. of sulphide ore, which assayed £2 4s. 7d. per ton. This ore-body was named "South branch." It was subsequently driven on westward a distance of 60 ft., when it connected to a crosscut driven from the main reef at 191 ft. east on that reef. A drive was also extended east on the South branch 47 ft. The reef on the whole proved to be small, ranging from 1 ft. to 3 ft. in width. Some samples assayed well, but in general the branch did not appear to be of much commercial value.

No. 9 level (1,000 ft. below collar of No. 5 shaft): From this level an extensive investigation of the Martha lode in the neighbourhood of the Waihi Co.'s eastern boundary and in the Grand Junction Co.'s area was carried out, with results to the end of the year that were very encouraging. Details of the work have already been given in the report concerning the Waihi Mine, and it will suffice to merely mention here that in the south crosscut from the Martha lode in Waihi Co.'s ground, 440 ft. east of No. 6 shaft south crosscut, sulphide ore of payable value was met with between the 22 ft. and 26 ft. marks. This ore was driven on eastward for 409 ft., the drive entering the Grand Junction ground at 112 ft. The first 69 ft. of driving was on poor ore, but from 69 ft. to 282 ft. the ore was consistently good, ranging from £1 1s. 6d. to £3 per ton. There was another poor stretch of ore from 282 ft. to 339 ft., but from the latter mark to the end of the distance driven values improved again, ranging from £1 15s. 9d. to £2 9s. 3d. per ton. A crosscut at 410 ft. revealed a width of 12 ft. of ore, and the face of the drive was still in good ore.

A total of 1,910 ft. of development work was carried out.

Output: The ore won from the mine during the year amounted to 16,558 long tons, which yielded gold and silver to the value of £48,307 12s. 4d. The gold won was 8,712 oz. 5 dwt. 4 gr., valued at £36,591 9s. 8d., and the silver 117,161 oz. 7 dwt., valued at £11,716 2s. 8d. The average number of men employed was 49, a number of whom were engaged at surface work, dismantling plant, &c.

*Golden Dawn Gold-mines, Ltd., Owharoa* (R. R. Morrison, Manager).—The Rising Sun Mine, now operated by the Golden Dawn Gold-mines, Ltd., was kept in a good state of repair throughout the year, but active mining was only resumed about the beginning of November, when a start was made to get out a parcel of

500 tons of quartz, arrangements for the crushing of which at the Waikino battery had been made with the Waihi Gold-mining Co. Five head of stamps were set aside at the battery, and special provision made for the treatment of the quartz entirely separate from the Waihi Co.'s own ore. Up to the end of the year only 154 long tons of the stone had been crushed. This yielded gold and silver to the value of £601 12s. 4d. The gold amounted to 138 oz. 12 dwt., valued at £582 2s. 4d., and the silver to 296 oz., valued at £19 10s. The ore came from a number of faces on Nos. 1 and 3 reefs above No. 3 adit, and the recovery, which was 90 per cent. of the assay value, was equal to £3 18s. per ton. During the short period the mine was worked, 17 men were employed.

*Talisman-Dubbo Gold-mines, Ltd., Karangahake.*—This company, which is now working on part of the Maria reef in portions of the areas previously held by the Talisman and New Zealand Crown Mines Companies, carried in during the year an adit on the reef from the old Dubbo section above the elevation of the Dubbo No. 1 level to a distance of approximately 556 ft. For practically the whole length the adit was on reef varying from about 18 in. in width up to 7 ft. 6 in. Throughout the driving the quartz is said to have shown colours on panning, but there were three runs or shoots, aggregating about 250 ft. in length, believed to have contained high values. Two tons of ore taken from one of them were sent to the School of Mines at Thames for treatment, and yielded 4 oz. 12 dwt. gold and silver, valued at £10 1s. 11d. The recovery represented, however, only about 54 per cent. of the assay value, the School of Mines plant only dealing with that portion of the gold amenable to amalgamation. Quartz is still showing in the face of the adit, and the driving is being continued. Three men on an average were employed.

Apart from the foregoing, and a little done by J. B. Morris on what is believed to be the Roderick Dhu reef, and some small amount by R. Schulzki in the New Talisman claim, no other work of consequence was carried out in the Karangahake area.

*Ohinemuri Gold and Silver Mines, Maratoto.*—For several months in the early part of the year this company continued its operations, carrying out a limited amount of prospecting work on No. 4 (Telluride) level, and mining ore, mainly from the Silverstream reef and a short shoot on the north part of the Camoola reef, on that level. A further 1,502 tons from these parts of the mine were sent to the mill for treatment, and 32,599 oz. 4 dwt. of bullion, valued at £2,813 4s. 4d., were recovered. This return not being payable, operations at the mine ceased, and the company went into liquidation.

*New Waiotahi Gold-mining Co., Thames.*—Practically the only work done in this mine during the year was the extension of the drive referred to in last year's report in a section of ground taken on tribute from the Moanataiari Co. This was carried northward from the neighbourhood of the old Caledonia shaft towards the old Hazelbank shaft, with a view to testing the Young American reef at this horizon. The drive was carried far enough to cut the reef if it had lived in this part of the mine, but no quartz was met with.

*Alburnia Gold-mining Co., Thames.*—Beyond a little further prospecting in the Whau level and the extension of the drive for a short distance on the Orlando reef in the Norwegian level, very little was done in this company's mine. A small crushing of 1 ton 1 cwt. 2 qr. 14 lb. of selected stone was put through the Thames School of Mines plant for a recovery of 49 oz. 19 dwt. gold, valued at £128 16s. 6d. As nothing of a promising nature had been located in the mine, and the company's funds were exhausted, all work was suspended in May, and the company later went into liquidation.

*Caledonia-Kurunui-Moanataiari Consolidated Gold-mining Co.* (S. G. Baker, Manager).—The sinking of the incline underground shaft from near the end of the main east crosscut was continued, and it was eventually carried down to 100 ft., at which depth a chamber was cut. During the sinking of the shaft several quartz formations were passed through, and when opening out from the chamber it was found that several reefs occurred in this part of the mine, none of which had been revealed in previous workings. On the more defined of them, now known as Nos. 1 and 2 reefs, more or less driving was done. On the latter, drives were put in 29 ft. north and 26 ft. south. The reef was about 4 ft. in width, and colours of gold were seen in it occasionally, but on the whole it was of low grade. On No. 1 reef a drive was put in north for 25 ft. The reef here was wider than the drive, and fairly heavily mineralized. In a southerly direction this reef was driven on to the end of the year for approximately 50 ft. In this drive the reef was smaller than in the north end, averaging only about 18 in. in width, but it showed colours freely. A rise was also put up to the intermediate level from near the foot of the incline shaft, partly to improve the ventilation, and partly to determine if the reefs got in the lower workings were identical with those cut in the intermediate. Several distinct quarts veins were cut in the rise, one of which may correspond with the reef known as No. 1, but no sign of No. 2 reef was seen. During the year some 32 tons of quartz, mainly recovered during the driving and rising operations, were treated for a recovery of 16 oz. 7 dwt. gold, valued at £46 11s.

*Occidental-Una United Gold-mining Co. (N.L.), Thames.*—This company only worked its mine for a very brief time in the early part of the year, during which 7½ tons of quartz, treated at Thames School of Mines, yielded 15 oz. 15 dwt. gold, valued at £46 4s. 4d. As its capital was exhausted, the company then went into liquidation, and the property was later disposed of to a syndicate, which had not up to the end of the year resumed active operations.

*Lucky Shot Gold-mining Co., Ltd., Thames.*—Comparatively little development work was done in this company's mine. A winze was sunk for 25 ft. from the intermediate level below the main adit with a view to following down the run of gold that had been found there, and a drive was put out from the bottom of this winze for 48 ft., but nothing of importance was located. Some stoping was done on the intermediate level and on a cross reef over No. 1 winze, and several crushings were put through from which gold to the amount of 71 oz. 17 dwt., valued at £194 3s. 6d., was recovered. About the middle of the year the mine was let to a number of tribute parties, of which Sparkes and party, working on a dropper from the Golden Age reef between the intermediate level and the main adit, was the most successful, winning 113 oz. 11 dwt. 4 gr. gold, valued at £313 7s. 7d. Several parties working on the Evening Star section of the property also won a few ounces. The total gold won from the mine for the year amounted to 224 oz. 9 dwt. 12 gr., valued at £613 16s. 8d. From two to eight men were tributing for various periods.

*Waiomo Sulphide Corporation, Ltd.* (J. H. Benney, Manager).—This company continued to work its Zeehan mine. The drive north on the New Reef on No. 5 level was extended to a total of 368 ft. on a reef averaging about 2½ ft. in width. A rise was put up on the reef for 67 ft., on reef averaging 3 ft. in width. A winze was also sunk on the reef for 75 ft., the reef averaging about 3 ft. in width. From the bottom of the winze a drive was extended south for 73 ft. The reef here was somewhat smaller, averaging only about 2 ft. in width. From the Zeehan reef on the same level a crosscut was put out westerly for 53 ft., but nothing of value was found. On No. 4 level the New Reef was driven on north for 127 ft. and south for 38 ft. Going north the reef averaged about 2 ft. in width, and in places carried some fair ore, but was generally of low grade. In the south drive the reef was about 1½ ft. wide, and was poor. On the same level a drive was extended 59 ft. north of the Birthday Rise on another reef, but no payable values were got. Stoping was carried out on small blocks on the New and Zeehan reefs, but the values were found to be limited to very short shoots, and even in these they were evidently very patchy. The battery was completed in May, when crushing was started, and up to the end of the year 2,425 tons of ore were treated for a recovery of 690 oz. 17 dwt. 3 gr. gold, valued at £2,903 1s. 7d., and 5,072 oz. 17 dwt. silver, valued at £338 1s. 7d., representing a recovery per ton of gold and silver to the value of £1 6s. 8d. It may be mentioned that the treatment consisted of crushing the ore, concentrating the heavier minerals on Wilfley tables, and passing the finer material through an oil-flotation unit. The concentrates thus obtained were disposed of for oversea treatment. The plant worked very well, but owing to inadequate supply of ore could not be worked at full capacity. Towards the end of the year the company acquired the Monowai claim, and did a good deal of work on it, with a view to securing from it

a supply of ore sufficient, in conjunction with that obtained from the Zeehan mine, to keep the battery in full work. No. 4 level was cleaned up and repaired, and relaid with tram-line for over 1,500 ft., and a start was made to break out ore from the north end of Hollis' stope. No. 2 level was cleaned out and repaired similarly, and relaid with rails in readiness for driving north on a hanging-wall branch of the Monowai reef. No. 1 level was also repaired into the north face, and some stoping was carried out on the block on the hanging-wall branch of the Monowai reef, which had been partially stoped by the old Monowai Co. in former years. This block was about 70 ft. in length, and had been stoped up to within from 50 ft. to 60 ft. of surface. The ore, about 100 tons, mined from this stope is said to have been of fair grade, but inasmuch as it was mixed with the Zeehan ore at the battery no definite information is available as to its value. On an average forty men were employed throughout the year.

*Cambria Mine, Thames.*—Practically the only work done consisted of driving an adit on what is known as Prescott's leader, two men being employed. The leader, which is very small, was driven on about 120 ft. and is still in the face. It is only a few inches in width, but carried a little gold all the way, with occasional small showings of specimen stone. Small parcels of the latter, aggregating 41 lb. in weight, were treated for a recovery of 19 oz. 15 dwt. gold, valued at £51 16s. 3d.

*Tui Gold-mining Co., Ltd., Thames.*—This company did a little further work, mainly by way of driving and rising on a reef, supposed to be the Hague-Smith, which was intersected and driven on for a short distance from the old Atlantic tunnel by former holders of the property. Nothing of any promise was located, and the company, having exhausted its funds, went into liquidation.

*North Star Mine, Thames.*—A little work was done in this mine by way of sinking a winze a few feet on a small leader at about 1,000 ft. in from the portal of No. 4 adit. It is said a little gold was seen in the leader, but owing to shortage of funds the holder of the claim was not able to push on with development on it.

*Hauraki Mines Consolidated, Ltd., Coromandel* (H. F. Shepherd, Manager).—Comparatively little further development-work was done in this company's mine. The water having been lowered to the 500 ft. level, some little driving was done north and south on that level, but owing to the company having very little money on hand only a few feet were done in either direction before work was stopped. On the 400 ft. level a little driving was also done on what was considered to be the Venus reef, in the hope of picking up its junction with the Stockwood reef, where it was thought a make of gold might occur. This junction was not located, however, and nothing of value was found. Some further stoping was carried out on the Stockwood reef, when small pockets of specimen stone were met with from time to time, but the reef on the whole was poor and somewhat smaller and more broken than formerly. A party of tributers having located a little specimen stone on the 300 ft. level, some work was then done on this level on a small cross-reef between the foot-wall and hanging-wall branches of Legge's Reef. A small stope, about 30 ft. in length, was opened on this cross-reef and carried up about 40 ft. A little gold was got over a short length in the leading stope, and for a few stopes up, but no gold whatever was seen in the upper 12 ft. or so of the working. A winze was also put down for about 20 ft. on the cross-reef, and in it to the depth of 6 ft. a little gold was got, but there were no values below that depth. On the 220 ft. level a few feet of driving was also done in search of a continuation of Legge's Reef at that horizon. In April a lot of trouble was experienced from breakages in the pumping-plant, and the water in the shaft rose up again over the 400 ft. level, and to within 67 ft. of the 300 ft. level, and, as the company's funds were now exhausted, all work was stopped, and the mine has since been idle. During the period of working some 201 tons of ore were crushed for a return of 86 oz. 5 dwt. gold, valued at £257 2s. 3d.

*Eclipse Mine, Mahakarau* (H. and J. McKenzie, Owners).—In the hope of intersecting at depth a leader from which some good surface prospects are said to have been got, another adit was started some distance from the adit previously put in, and at a little lower elevation. To the end of the year this was in about 160 ft. from the portal, but nothing of value had up till then been met with. The adit was being continued.

*Jupiter Syndicate, Tokatea, Coromandel.*—Towards the end of the year this syndicate carried out some work on the western branch of the big Tokatea reef at a place near Buffalo Creek where the reef was believed to carry mineral in better value than at any places where it had been previously tried. A good deal of stripping was done on the hanging-wall of the reef, which here appears to be about 150 ft. in width, and a drive was put in for about 48 ft. on the hanging-wall side, from 40 ft. to 50 ft. below the outcrop. The stripping and driving served to reveal in the body of the reef patches containing a good showing of galena, copper, and zinc, but much work will still require to be done before it can be determined if the reef carries sufficient value to pay for working.

### Quicksilver Mines.

*Kaikohe Development, Ltd., Ngawha Springs* (R. H. Goodwin, Manager).—Owing to various delays, one of the principal causes of which was the exceedingly bad weather experienced in this neighbourhood for several months in the early part of the year, the treatment plant on this company's property was not completed till well on towards the middle of the year, and when it was completed and a start made to actively treat the mercury-bearing deposits a number of difficulties presented themselves to the successful working of the various units. Among other things it was found that owing to the very sodden nature of the material to be treated insufficient heat was applied to it in passing through the rotary dryers to get rid of the moisture satisfactorily. To get over this defect brick furnaces were built under the rotary dryers, the heat from which radiated out over a considerable area of the dryer shells, and the installation of these gave more satisfactory results. There were some difficulties in adjusting the feed from the machines that fed the powdered fuel to boilers and furnaces, but these have, I understand, been overcome. Trouble was also experienced in connection with the passage of some form of carbonaceous material into the precipitation chambers, where it was thrown down with the mercury and was found hard to thoroughly separate from it. However, these difficulties will no doubt all be overcome shortly, and the works may be expected soon to be in full production. The rest of the large plant operated well. During the year 1 ton 16 cwt. 8 lb. of quicksilver, valued at £1,080, was recovered, and an average of fifty-two men employed.

No work of any consequence was done on the Great British or Mount Mitchell areas at Puhipuhi, in the Whangarei district.

### Sulphur.

Operations were carried out fairly continuously during the year at White Island, by White Island Products, Ltd. Sulphur-rock, amounting to 2,831 tons, containing from 25 per cent. to 35 per cent. sulphur, was mined and disposed of as fertilizer for £13,261, and a further 200 tons, containing 20 per cent. sulphur, valued at £80, was mined and stacked. Retorted sulphur, 99 per cent. grade, to the amount of 25 tons, valued at £150, was also recovered. On the average twenty-five men were employed.

### Oil-wells.

*Taranaki Oil Fields (N.Z.), N.L.*—This company continued its operations at Gisborne No. 2 well at Morere till April, during which time the well was deepened from 3,097 ft. to 3,910 ft., at which point drilling was suspended. As explained in last year's report, this well had been drilled to 3,180 ft. with cable tools, but as it was found greater depth could not be attained with these it was decided to equip the well with a rotary plant. Pending the installation of the latter, the well partially closed up, and by the end of the year

had only been cleared to a depth of 3,097 ft. For a considerable distance prior to reaching the 3,024 ft. mark the well was in caving shale, but from this point to 3,178 ft. it passed through calcareous glauconitic sandstone. Some water came in at 2,996 ft., and there was a heavy flow of salt water at 3,025 ft. Gas was noticed at 2,996 ft., also at 3,050 ft., while at 3,122 ft. the gas-pressure increased to a marked extent. Some of the sandstone was found to be hard and firm, but most of it caved badly, resulting in progress being very slow and much difficulty being experienced in keeping the wall clear. Cleaning out the well to the old bottom at 3,180 ft. proved a difficult task, owing to the continuous caving of a bed of fine sand at 3,040–3,050 ft., but the trouble was overcome by mudding up under a pressure of several hundred pounds per square inch, and drilling with the rotary plant then went on fairly smoothly to 3,250 ft., the last 50 ft. of this depth being in hard sandstone. Below 3,250 ft. shales of various types with a few beds of sandstone were penetrated. At several points broken ground that caved badly was met with, and difficulty in keeping the well open was increased by incoming water. Gas in small quantity, but at high pressure, showed continuously below 3,250 ft., and was particularly active at 3,750 ft. At a depth of 3,860 ft. the drill-bit seized, and a twist-off occurred, the bit, a 20 ft. drill-collar, and about 25 ft. of drill-pipe being left in the hole. Repeated efforts to recover these lost tools were made, but although they were lifted a little it was found impossible to bring them to the surface. An effort was then made to side-track them, and in this way the well was eventually deepened to 3,910 ft. From 3,860 ft. to 3,895 ft. the drill passed through broken ground and sticky shale, and at the latter depth entered soft sand which continued to bottom. During this part of the drilling continual trouble was experienced, the drilling-tools frequently sticking fast and only being released with great difficulty, and finally the drill-pipe parted near the bottom, leaving the bit and part of the drill-collar in the well. It was then recognized that it was impracticable to drill the well any deeper, and operations were suspended. At the time of the loss of the first set of tools at 3,860 ft. it was found necessary, while fishing operations were being carried out, to take steps to prevent circulation of mud behind the casing, and this was accomplished by placing in 24 tons of cement. When it was found the lost tools could not be recovered, it was decided to run a string of casing, and swab the mud out of the well in order to determine whether there was sufficient volume of gas to cause it to flow, and perhaps bring in a flow of oil. The result showed, however, that gas was not present in any quantity, but that what there was evidently occurred at high pressure. Samples of the sand from 3,895 ft. to 3,910 ft. are said to have given definite reaction for oil on being treated with chloroform. Before closing down on the 4th April a heavy charge of blasting gelatine was fired in the sands between 2,635 ft. and 2,690 ft., which had been cased off, but nothing of value was disclosed.

It was then determined by the company to drill in the Whatatutu area, on what is known as Waitangi Hill, roughly about 40 miles north from the Gisborne No. 2 well. In this area a number of strong seepages of oil and gas occur, and in past years a number of shallow wells were drilled there, from one of which, drilled to a depth of 1,478 ft., a flow of 6 barrels of oil per day is said to have been obtained at a depth of 664 ft. The rotary plant used at the Gisborne No. 2 well was shifted to the new site, which is four miles north-east of the Township of Whatatutu, in the County of Waikohu, the only difference being that owing to the inaccessibility of the new location, and the high cost of transport to it, the steam power used at Morere was replaced by two 125 h.p. petrol-engines with suitable reduction and reversing gear. Drilling of the new well, known as Waitangi No. 1, was commenced on the 6th December, and by the end of the year the well had been carried down to a depth of 373 ft. Stove-pipe casing, 22 in. diameter, was set at 45 ft., and 16 in. ordinary casing was run and set at 368 ft. A good show of oil was got at 232 ft. The country penetrated was sandy shale with numerous hard limey bands. An average of seventeen men was employed.

*Blenheim Oil-well Reclamation Co., Ltd.*—Operations were continued at No. 2 Blenheim well, New Plymouth, which was drilled to 2,096½ ft., at which depth steps were taken to shut off water by introducing 4½ tons of Wilsonite. When drilling a few feet below the shoe of the casing to admit of a test of the shut-off, the cable broke, leaving the drilling-tool in the well. Fishing operations were started, and the tool was got hold of, but repeated efforts to get it to the surface failed. It was raised to within about 1,186 ft. of the top, but could not be got any further, and eventually it was driven back to the bottom and an attempt made to side-track it. A wipstock was put in at 2,044 ft., and a start made to cut through the casing, and this operation was still in hand at the end of the year.

*Coal-oil (N.Z.), Ltd.*—Erection of the drilling-plant was completed, and, various necessary appliances having at last come to hand, the drilling of Omata No. 1 well, at Omata, New Plymouth, was begun on the 25th April. On 17th May 293 ft. of 21½ in. casing was set and cemented with 4½ tons of Wilsonite. The well was then continued as a 19¾ in. hole to 1,971 ft., where the 16 in. casing was set on 28th July, and cemented with 6 tons of Wilsonite. Drilling operations were then delayed till the 8th September, waiting for a 14¾ in. Hughes Simplex bit. The well was then continued to 2,917 ft. with the intention of setting the 11¾ in. casing at that depth. The work of casing this portion of the well was delayed, however, pending the testing of several light oil and gas shows by shooting at 2,305 ft.–2,308 ft. and 2,645 ft.–2,652 ft. After shooting the well at both of these points without any increase of oil or gas, the 11¾ in. casing was lowered to 2,460 ft. and worked down with considerable difficulty to 2,525 ft. It was then found that the formation at this depth was squeezing in, and as the casing had a round nose guide on the end it was withdrawn to change to a cutting shoe to allow the casing to cut its way through the squeezing formation. After pulling the casing, the well was remudded, and a bit run to the bottom to clear the well. Whilst withdrawing the bit, it stuck at 2,527 ft., and could not be pulled loose, and at the end of the year operations were in hand to side-track it at that depth. The average number of men employed was seventeen.

*Moturoa Oilfields (N.Z.), Ltd.*—Operations were begun at this company's Moturoa No. 1 well in February. The rig was erected on a location close to Paritutu on the Harbour Board reserve at Moturoa, New Plymouth. Drilling was started on 31st March, and by the 18th November the well had been drilled to 3,310 ft. In drilling, no oil of any consequence was got till the horizon 2,600 ft.–2,700 ft. was reached, and from here some five to six barrels per day were baled for some days. No gas came from this horizon, and as the management was not very optimistic about getting any very great supply of oil from it the decision was come to to drill the well on to 3,300 ft., some old records seeming to indicate that at a corresponding horizon in one of the old Taranaki Oil Co.'s wells a certain amount of oil was got. In the Moturoa No. 1 well, however, no faintest indication of either oil or gas was got after passing 2,700 ft., and when the well had reached 3,310 ft. drilling was stopped. In the meantime, before drilling of the well onward from the 2,700 ft. mark had been resumed, the 6 in. casing was run in and seated at 2,542 ft., and some days later a flow of oil came up behind it, and between it and the 8 in. casing. The presumption was that this oil came from a horizon at about 2,300 ft., or from between 2,110 ft. and that point, but as no sign of oil had been got in drilling this part of the well the actual depth from which it came could only be guessed at. It was clear, however, that the oil that came up in this way was not from the 2,600 ft.–2,700 ft. horizon. After stopping drilling at 3,310 ft., the management decided to come back and make some tests above the 2,700 ft. mark to see what production could be obtained. The result of these tests seemed to indicate that the well could probably be made to produce from fifteen to twenty barrels of oil daily, but as this would entail the installation of a pumping unit, and the small production for an initial well did not seem to justify the expenditure in securing the necessary plant, it was decided to leave the casing intact so that when further wells are drilled this one can be operated. It is estimated that about two hundred barrels of oil came from the well during the drilling and testing, but this was not all saved. Before the end of the year it was decided to start the drilling of a second well, and the rig was dismantled for this purpose. On an average eight men were employed.

*New Plymouth (N.Z.) Oil-wells, Ltd.*—This company erected a drilling-rig, including a fine steel derrick 80 ft. in height, and started on 9th December the drilling of a well at a point about 650 ft. south-south-easterly from Moturoa Trig. Station in Paritutu Survey District, New Plymouth, and almost in direct line between Moturoa No. 1 well and

Omata No. 1 well. Up to the end of the year the well had been drilled to 280 ft., and 10¾ in. casing had been run to 273 ft. During the time the work was in hand an average of six men was employed.

*Whanga Petroleum Prospecting and Development Co., Ltd.*—On 22nd March this company started the drilling of a well at Aotuhia, about ten miles north-west from Whangamomona, in Whangamomona County. Up to the 15th April a depth of 454 ft. was reached. At 265 ft. fine sand was penetrated, which caused much difficulty in keeping the well open, but the driller struggled along to 454 ft., when he found it impossible, owing to the constant inrush of the sand, to get any deeper with the small 4-in. hole. The well was then reamed to take 5 in. casing, and by the 31st May it had been reamed to this size to 301 ft. By the 19th June the 5 in. casing had been run to 345 ft., but the sand still continued to give trouble, and it was found impossible to drill an open hole through it. It was then decided to run 3 in. casing inside the 5 in. By the 7th August this 3 in. casing was got down to 395 ft., and drilling was continued until the 30th August, when a depth of 640 ft. was reached. At this point another bed of fine-running sand was entered, and as it was now realized it would be impossible to reach the depth aimed at, 2,000 ft., with so small a drill-hole, and as finance for enlarging the well was not available, it was decided to suspend operations.

*New Zealand Oil Syndicate.*—During the year desultory efforts were made to carry the Prospect Valley No. 2 bore at Whangamomona on from the 1,230 ft. mark it had reached during the previous year. The work met with little success. Up to the end of the year the well had only been deepened to 1,340 ft. The failure to do any better with the well may be attributed to the extremely primitive and ineffective plant used, and it is not likely that so long as this plant is retained any progress of consequence will be made. Traces of oil and gas are said to have been got at various points.

### Accidents.

I am pleased to be able to record once more that during the year no fatal accidents have occurred at any of the mines or quarries in the district, and there was only one accident reported as serious. This happened in the Waihi Mine, where a miner named Thomas Berryman had his left arm broken. He was working a machine drill at the time, when the column bar loosened, and a piece of wooden blocking fell from the top of it, striking him on the arm and fracturing it.

## WEST COAST INSPECTION DISTRICT (E. J. Scoble, Inspector of Mines).

### Quartz-mining.

#### *Marlborough District.*

*Dominion Consolidated Mine* (Mr. R. W. Fisher, Manager).—Eight men employed. Work at this mine was intermittent, on account of inadequate water-supplies during the early part of the year, and ceased altogether in June, as values recovered from the stone exploited were proved to have fallen below paying-point. Development work carried out for the period consists of the following: No. 3 level was advanced 64 ft. north in country the full distance. The Intermediate level was extended 45 ft., all on quartz wider than the drive, values low. The mill crushed and treated some 780 tons of ore for a yield of 141 oz. 2 dwt. gold, worth £528 9s. 4d. Recoveries were obtained by amalgamation alone, no equipment being provided for the process of cyanidation. An Ingersoll Rand petrol-driven air-compressor (capacity, 120 cubic feet of free air per minute) was installed to make up for the deficiency in water-supplies. The machine is rated to work two rock-drills at a pressure of 90 lb. When operated it gave entire satisfaction.

#### *Reefton District.*

*Blackwater Mine* (R. A. Stewart, Manager).—This mine continued active operations during the year, the average number of men employed being 170. The ore reserve amounted to some 84,660 tons (non-inclusive of ore in pillars) at the end of December, with values of 9·60 dwt. This estimate, compared with the previous corresponding period, shows an increase of 11,160 milling tons of ore, also a slight rise in values (0·09 dwt.) over those formerly obtaining.

Development work has occurred as follows:—

Driving: No. 6½ level was extended south (on fault line) on the 220 ft. line of reef for a distance of 57½ ft., but failed to disclose anything of importance. No. 7 level was extended 93½ ft. beyond the known reef, but driving was discontinued at the point mentioned, notwithstanding that the country traversed had a most promising appearance. A crosscut was laid off from this level with the object of reaching a point vertically under the Prohibition shaft, as it is intended to ultimately sink the latter down to and below No. 7. The crosscut has been advanced 91½ ft., but a further 25 ft. requires to be driven before the objective is reached. No. 8 level was extended for 175½ ft., mainly through blank or faulted country, which same separates the main reef from the Prohibition block. The block referred to remains to be located. No. 9 level was extended a distance of 145½ ft., all on reef averaging 13·13 dwt. over an average width of 31 in. Approximately 55 ft. of additional driving is expected here before the fault connecting with the Prohibition block is reached. The whole of the estimated ore on this level, 15,195 tons, is confined to the last 500 ft. of drive. No. 10 level: The progress here was 419 ft., of which 381 ft. exposed reef worth 13·16 dwt., the average width being 25 in. Stoping on this block north and south of rise 1,400 north was discontinued at 55 ft. below No. 9 level, as the reef at that point proved to be unpayable. No. 11 level south: The total distance driven was 127½ ft., of which 58 ft. exposed reef worth 22·13 dwt., the average width being 17 in. Driving was discontinued at a total distance of 202½ ft., as the southern extremity of the known reef had been reached. No. 11 level north: The total distance driven was 812½ ft., of which 345 ft. exposed reef worth 13·1 dwt., with an average width of 31 in. The most important development on this level consisted of the opening-up of Hughes' block over a length of 305 ft., with values at 13·43 dwt., and an average width of 36 in. The block mentioned shows an increased length as compared with the corresponding block on No. 10 level. In the next block ahead winze 700 north is down to a depth of 50 ft. on reef worth 14·86 dwt., with an average width of 39 in.

Rising: The total amount of rising done for the year amounts to 314½ ft., of which 249½ ft. exposed reef worth 16·41 dwt., with widths averaging 37½ in.

Winzing: The total amount of winzing was 510¾ ft., of which 441 ft. were on reef worth 15·13 dwt., with a width averaging 29·4 in.

The total footage of driving was 1,886 ft., of which 986½ ft., or 52 per cent., was on reef. This proportion is low, and is accounted for by the extra driving done (prospecting) on Nos. 6½ and 7 levels, and also the blank encountered on No. 11 level north.

Crosscutting in all amounted to 187½ ft.

It should be noted that the whole of the ore reserves, those below No. 10 level excepted, are now confined to the north end of the mine, with the result that underground transport has become an expensive item. The consequent limitation of trucking roads has made it difficult to maintain output also. Provision is being made for deepening the Prohibition shaft in the first place, and afterwards introducing either horse or motor transport underground so as to overcome the difficulties referred to.

The battery crushed 41,112 tons of ore for a yield of 17,781 oz. 9 dwt. gold, of which 14,135 oz. 2 dwt. were obtained by amalgamation and 3,646 oz. 7 dwt. by cyanidation and the treatment of concentrates, the value of the whole recovery being £70,094 0s. 1d. As the quantity of ore crushed was greater than that of the previous year by 3,368 tons, and the total value shows an increase of £5,699 17s. 11d. for the same period, it appears that a slight increase in values has occurred.

*Alexander Mine.*—Development work for the period has been confined to the Bull, McVicar, and McKay sections. Stoping has been chiefly carried out on the Bull and McVicar blocks, but the completion of the tram-line (referred to in last report) to the north end of the property in November enabled a small tonnage of ore to be drawn from the

Mullocky Creek workings and the McKay block, which is located adjacent thereto. Bull block: The intermediate level was continued on reef and driven to 60 ft. south of the prospector's winze, where the stone was completely cut off by a fault plane. The average value was £3 12s. 6d. per ton, and the width 45 in. Some 20 ft. below the intermediate the kindly grey rock hitherto prevailing gave place to a brown rock, at which stage the reef tapered and disappeared. The block described was subsequently stoped to the outcrop, and produced in all some 900 tons of good milling-ore. Firmiston block: This is a small make of reef situated between the Bull and McVicar blocks, which are about 12 chains apart. The block was traced for a length of 1 chain to the south, where it is cut off by a fault. At the north end it appears to pass into reef formation, where further work is required. The reef averages 3 ft. in width to a depth of 10 ft. below the outcrop, and then appears to pass into a low-grade formation. Some 200 tons of ore were sent to the battery from this block. McVicar block: This block furnished about 2,500 tons, or 68 per cent. of the ore sent to the mill. At the north end of the block there is evidence of considerable earth-movement in the form of a fault-line 2 ft. wide, which is filled with a dark-blue mineralized pug. The reef splits into stringers at the south end, and finally terminates in oxidized brown country in all levels and stopes above No. 3. Some values continue below the change in reef formation, and it is proposed to follow the outcrop south from No. 1 level in order to ascertain whether or not there is another make of stone between the McVicar and Firmston blocks. At 40 ft., under No. 2 level, an intermediate was started on 6 in. of stone, and driven south of No. 1 winze for 110 ft. Stoping was subsequently carried out from this intermediate to No. 2 level. No. 3 level (entrance crosscut): A reef track followed at 30 ft. made into stone with values ranging from 15s. to £1 15s. per ton, over a width of 36 in. This stone was followed by a rise for 15 ft., where it disappeared, but on breaking the hanging-wall a companion section of reef was encountered. The rise is now up 28 ft. above No. 3 level in the hanging-wall make of quartz—width, 30 in.; value, 12s. per ton. Bruno block: No work has been done on this section during the year. McKay block: No. 1 crosscut was advanced 6 ft., making the total measurement 149 ft. from the entrance, where reef-matter, 36 in. wide, consisting of mullock veins and white mineralized quartz, was cut; value, 12s. per ton. Driving south from No. 1 crosscut was continued for 105 ft., with the stone gradually turning into reef-track. No. 2 rise was started at 90 ft. south of the crosscut and holed through to No. 2 winze, the distance from outcrop to level being 119 ft. The rise followed a reef-track, 12 in. wide, with a flat dip of 1 in 4 for the first 57 ft. At this point a head was encountered, and the track was replaced with a 6 in. reef carrying average values of £1 for the next 10 ft. The reef then widened out to 15 in., and values for the last 22 ft. of winzing averaged £3. Intermediate off No. 1 winze (this was put in on account of the flat dip in the reef): Driving has been advanced north 17 ft. and south 6 ft., with average values of £2 17s. and £1 6s. 6d. over 40 in. and 21 in. respectively. Northern outcrop (McKay), 40 ft. above No. 1 Mullocky Creek level: An outcrop on a spur (probably a continuation of the McKay reef) has been driven on for 19 ft.; average values, £1 7s. 6d. per ton; width, 36 in. At this point the reef made into two tracks, one running south-east and the other south-west. Driving on these has advanced 9 ft. and 13 ft. respectively. Downey's reef: A winze has been sunk thereon to a depth of 16 ft. This started on stone with a width of 60 in., but same rapidly diminished in size until it disappeared at 14 ft., where hard grey country came in. Value of stone, £1 7s. 6d. per ton; and average width of reef, 27 in. Mullocky Creek No. 1 level: A little stoping south of No. 1 rise on the Loftus reef has been carried out here. Values, £1 9s. 6d. per ton; and width of reef, 30 in. The reef-filling is very irregular in width, and consists of a series of splices of quartz, both vertical and lateral. The quartz and mullock in this section of the mine are too hard for hand steel. New tram-line: The northern part of the mine was connected to the battery by tram-line during the year. From the battery-hopper an incline tram-line rises 330 ft. in a distance of 14 chains. One-half the tramway is supported on trestles and the other half is benched out of a spur. A ground tram-line, 40 chains in length, leads from a hopper situated at the head of the incline to an exit tunnel from a large ground hopper below No. 1 Mullocky Creek level. The ground hopper can be filled direct from No. 1 Mullocky Creek level, and also by aerial connections laid to the McKay and Bruno sections of the property. The first aerial—that to the McKay block—delivers ore very effectively in 4 cwt. self-trapping boxes, over a distance of 12 chains, with a fall of 200 ft. Power plant: During the year the directors considered the question of installing a suitable power plant at the mine, together with a compressor, but, finances not permitting, the scheme was abandoned. Battery: The ten-head treatment plant has been kept running for two shifts daily over the greater part of the year; 3,686 tons of ore were crushed for a yield of 3,096 oz. 2 dwt. 10 gr., of which 2,457 oz. 2 dwt. 6 gr. were obtained by amalgamation and 639 oz. 0 dwt. 4 gr. by cyanidation, the value of the whole being £13,927 11s. 6d.

*Homer Mine* (Owners, Messrs. Harrison and Absalom).—This is a new mine situated at a distance of one-half mile (air-line) south of the Blackwater Mine, and in the vicinity of Quartz Creek. Operations thereat have been confined to driving two levels, 65 ft. apart, on a lode averaging from 2 ft. to 3 ft. in thickness, with values varying from good, to medium, and to zero. The levels referred to (Nos. 1 and 2) have been advanced south over total distances of 78 ft. and 170 ft. respectively, all on quartz. The lode is somewhat troubled at a point 100 ft. in from the surface on No. 2 level, and continues so, on the level mentioned, for 50 ft., then firms, but shows later signs of crush at the face. Both reef and enclosing country have a favourable appearance on No. 1 level. Values obtained from the former are low, however, especially so over the latter portion of stone exposed. The reef is most interesting in spite of general low average values, and is full worthy of considerable additional prospecting, both in a southerly direction and at depth. The erection of a five-stamp mill, together with an amalgamating table, is in progress on the property.

*New Big River Mine.*—This mine remained idle throughout the year. It is, however, understood that negotiations are in progress that might result in a resumption of operations in the ensuing year.

*The North Big River, Progress,* and *Hercules Mines* have been idle throughout the year.

*The South Blackwater, New Millerton,* and *South Big River* companies have gone into liquidation.

*Wealth of Nations Mine.*—No work of any description has taken place at this company's mine during the year. The mill, however, continues to operate on residues formerly dumped on account of the difficulty attached to treating same. Sands from the old Progress mill are also treated at this plant, satisfactory returns being obtained in both cases. The material treated amounted to 957 tons, from which 467 oz. 6 dwt. 14 gr. of gold were obtained, with a value of £1,259 18s. 1d. Six men were employed throughout the period.

*Murray Creek Mine.*—No work has been done at this mine during the year. Experiments, however, were made at the Thames School of Mines on respective representative samples of ore and sands taken from the mine and forwarded to that Institute. The experiments were undertaken in order to determine the best method of treating the ore, as its arsenic and antimony content had hitherto prevented it being treated at a profit, though contained values were satisfactory. As a result of the tests made it was concluded that the arsenic and antimony would require to be removed by roasting, either with or without lime, if the ore were to be treated successfully.

*Westport District.*

*Britannia Mine.*—No work of any description has been done on this company's property during the year.

### Dredging.

*Rimu Flat Dredge.*—This company's 10-cubic-foot dredge was in continuous operation throughout the year, several short periods excepted during which times necessary repairs were effected. Actual dredging covered 269½ working-days, or 6,464 hours, out of a possible 7,200 hours, representing 89 per cent. of the possible digging-time. The year's operations resulted in 2,055,096 cubic yards of gravel being won and treated from an area of 31·74 acres, over an average depth of 40 ft. From this material 9,840 ounces of gold, valued at £40,207, were obtained, which shows a falling-off in values of £6,763, or 0·79d. per cubic yard, when compared with the previous year's yield. This decrease in gross production was anticipated, as the results of borehole tests had shown the existence

of an intermediate low-grade gravel zone through which it was necessary to dredge in order to reach higher-grade ground extending to the east of the area being worked. Operating-costs work out for the period at 3·8d. per cubic yard of gravel treated. The figures mentioned cover dredging-work, bush clearing and stumping, electrical energy, machine-shop maintenance, and all overhead expenses. The dredge is in a satisfactory condition, and can still maintain a high output, irrespective of the fact that a contemplated change-over to the new dredge during 1931 resulted in the limitation of expenditure as applied to repairs. The pontoon portion of the company's new steel dredge is about 75 per cent. completed. This is to be an all-steel structure, 110 ft. in length, 56 ft. wide, and 11 ft. deep. The pontoon or hull pontoon, which is divided into nineteen watertight compartments, is most substantially constructed, and is designed in such a way as to ensure that it will adequately resist the maximum stresses likely to be encountered when viewed from past years' dredging experiences. The main superstructure, both longitudinal and transverse trusses, and housing also, are likewise of substantial construction, well braced in all directions to withstand the digging-shock usually met with in dredging gravel of the type found at Rimu Flat. Digging-ladder, stacker, and spud will be entirely new, and much stronger than similar equipment on the present dredge structure. The main digging-motor on the new dredge will have a capacity of 300 h.p., as against a 200 h.p. digging-motor in use, thereby necessitating a corresponding increase in all shafts and gear operated by it. The revolving screen used in the washing and sizing of the gravel will be entirely rebuilt, and all parts that have heretofore shown weaknesses in same will be strengthened. The Kanieri Electric, Ltd., is erecting a new 1,800 h.p. hydro-electric plant in order to supply the additional electrical energy required to operate the new dredge, and with ample power then available it is expected that the yardage treated will be increased by 15 per cent., thereby bringing about a substantial reduction in operating-costs, and also permitting of the treatment of lower-grade gravels than has hitherto been possible. It is hoped to have the new dredge completed and in operation by the 1st July, 1931. The average number of men employed throughout the year was fifty.

*Okarito Five-mile Beach Gold-dredging Co., Ltd.*—During the year this company has been actively engaged in transporting pipes for the main line and dredging machinery from Okarito to the claim. The heavier portions of the machinery, consisting of the main ladder (in sections), top and bottom tumblers, and crown wheel, were taken along the sea-beach with a team of nine horses. This work was accomplished under the most difficult conditions imaginable, horses and wagon at times being completely enveloped in the breakers when passing outreaching sections of rock. The pipes and lighter portions of the machinery were sledged over a steep and narrow track through heavy bush country to a point at the Three-mile Creek, and thence along the sea-beach to the claim. The laying of the main pipe line from Lake Alpine to the claim was completed in May. The length of the line from the lake to where operations will be commenced with the dredge is 14,460 ft., and the height of the lake above the claim is 314 ft. In June a commencement was made with a small hydraulic elevating-plant to open out a paddock alongside where the dredge pontoons were built, in which the dredge, when completed, will start work. The opening-up of the ground in the manner described has resulted in the winning of gold to the value of £1,810. The pontoons for the dredge were completed early in December and successfully launched—the paddock having previously been cleared of the elevating-plant and afterwards filled with water. The erecting of the gantry and heavy framing for the machinery was proceeded with immediately the pontoons were launched. It is expected that the dredge will be ready to start operations about June, 1931. The hydraulic elevating-plant has been removed to a site some 27 chains to the north of its original position, where it could be kept at work without affecting the water-level in the dredge paddock. The necessary trestle and boxes were erected, and bottom had been reached with the elevator in its new position when work ceased at the end of the year. It is intended to continue operating the elevator until the water is required for working the dredge. Motive power for the dredge will be derived from four pelton wheels on board. A large spread of gold-saving tables will be provided, and the tailings (consisting for the most part of black sand) will be stacked some distance astern of the dredge by means of a hydraulic elevator so designed that the water used in conveying the tailings to where they will be discharged will be returned to the paddock through a pipe-line of the required diameter. An average of twenty-two men was employed throughout the year.

### Alluvial Mining.

*Mahakipawa Mine* (Mr. G. W. Lowes, Manager).—No production work has taken place at this mine for the period under review. Boring was, however, resorted to during the early part of the year, but nothing greatly important was proved in connection therewith, though one hole, out of a fair number sunk, gave highly payable values. Mr. K. M. Barrance, mining engineer, inspected the property in August, and afterwards made a comprehensive report thereon. The work referred to involved the unwatering of the mine so as to permit samples of wash-dirt being taken from the various drives and faces, and absorbed in all a period of eight days. As a result of the examination made, Mr. Barrance came to the conclusion that the wash-dirt followed the south-east drive, then crossed over the south drive, and lay to the west between 240 ft. and 300 ft. south of the shaft crosscut. He further concluded that good-grade dirt existed in the wing drive just started east of the main south-drive face. A truck of dirt taken from the point mentioned returned 1 oz. of gold. Mr. Barrance's report received due consideration by the shareholders of the company, and as a result thereof it was decided to raise capital so as to enable mining operations to be resumed in January, 1931. In the meantime the directors took appropriate action in the Warden's Court for the district, and were successful in obtaining the forfeiture of several road claims that separated an eastern and a western area respectively, which latter comprise the company's two holdings. One of the claims forfeited had been held for twelve years, during which practically no mining had been done on it. Its near vicinity to the Mahakipawa mine restricted development work to the west.

*Collingwood (Rocky River, Takaka, &c.).*—Seven men were employed, winning 94 oz. 2 dwt. 12 gr. of gold, valued at £354 0s. 9d.

*Marlborough (Deep Creek).*—Two men were employed, winning 46 oz. 17 dwt. 3 gr. of gold, valued at £178 6s. 3d.

*Howard Diggings.*—Returns to hand show that nine men were employed, winning 178 oz. of gold, valued at £681 2s. 10d.

*Murchison (Matakitaki, Maruia,* and *Lyell).*—Three men were employed, winning 24 oz. 7 dwt. 2 gr. of gold, valued at £93 18s. 10d.

*Westport (Charleston, Birchfield, &c.).*—Four men were employed, winning 154 oz. 2 dwt. 5 gr. of gold, valued at £550 16s. 4d.

*Reefton (*including *Blackwater* and *Merrijigs, &c.).*—One hundred and three men were employed, winning 46 oz. 11 dwt. 16 gr. of gold, valued at £185 1s. 1d.

*Grey (*including *Ahaura, Barrytown,* and *South Beach).*—Two men were employed, winning 136 oz. 14 dwt. 9 gr. of gold, valued at £531 16s. 9d.

*Kumara (*including *Stafford, Greenstone,* and *Callaghans).*—Fifteen men were employed, winning 599 oz. 10 dwt. 7 gr. of gold, valued at £2,442 10s. 11d. The principal producers were the Hohonu Sluicing Co., at Greenstone, with 300 oz., valued at £1,178, and Stubbs and Steel's claim at Maori Point (Greenstone) with 187 oz., valued at £736.

*Hohonu Gold Sluicing Co., Ltd.* (Mr. J. A. Peever, Manager): Six men employed. Sluicing operations at this claim were curtailed through several breaks in the head race (fourteen miles long) and the collapse of fluming connected with same. These defects were due to the after-effects of the earthquake of June, 1929. There were 230,500 cubic yards of gravel sluiced in 1,620 hours, or an average of 142 yards per hour; 300 oz. of gold were won, worth £1,178, thus showing values of 1·02d. per cubic yard treated. A higher value is anticipated for the succeeding period, as shallower ground will be sluiced. The output also is confidently expected to be higher.

*Hokitika (*including *Rimu, Arahura,* and *Blue Spur).*—Nineteen men were employed, winning 179 oz. 3 dwt. 4 gr. of gold, valued at £697 4s. 5d.

*Ross (*including *Okarito, Waiho,* the *North Beach,* also the *Three* and *Five Mile Beaches, South).*—Eight men were employed, winning 163 oz. 17 dwt. 2 gr. of gold, valued at £626 12s. 11d.

### Minerals other than Gold.

*Iron.*—Operations at the Onakaka works were resumed during the early part of the year, and carried on practically without interruption for the full period. The pipemaking plant (under construction during the previous year) was early put in commission, and resulted in a reasonable proportion of the company's pig iron being absorbed. The pipes manufactured are of the cast type, made in vertical casings by the "Table" method in preference to that known as the "Spun." The table at Onakaka has the various sizes of pipe moulds 4 in. and upwards bolted to it. This is spanned above by a 7-ton overhead electrical crane. Alongside are the core-stoves and coremaking machines also spanned by an electrical crane. The core-bars are of cast iron, and are made in the foundry adjacent to the pipe plant. These bars, when warmed up, are splashed with a preparation of clay and sawdust and are then struck up with loam to give a clean straight barrel. This is tried in a gas-fired oven which has a top and bottom bogey on which the cores lay and are pushed in and out as required. The moulds on the table are rammed up around a pattern with 2 in. of sand. Pneumatic rammers are employed. When the pattern is drawn out of the mould it is blackened with a wash of clay and blacking and then dried by gas. The cores are placed in these boxes when everything is dry and are cast with metal from a 4-ton ladle, which takes the metal from a receiver in front of the cupolas as required. The metal used is remelted in a cupola, of which there are two ready for use as required. The pipes, when stripped from the moulds, are allowed to roll on the gantry, where the first operation is the stripping of sand from the inside. This sand comes off the core and is used again. From this point the pipe goes to the end-cutter, which cuts off the 6 in. of extra metal which is always cast to allow any dirt or dross to float to the top as well as to take care of shrinkage. After the end-cutter, pneumatic machines are used to fettle and trim up the pipes. The pipes now pass to a very substantial testing-machine, where every pipe is subjected to the test pressure required according to the class of manufacture, whether Class A, B, C, or D. At these pressures they are rapped with a substantial hammer, care being exercised not to allow any doubtful pipe to pass through. From the testing-plant the pipe rolls to the gas-fired heating-stove, where all pipes are heated to 250° F., and from there roll into a bath of Angus Smith solution. From this bath the pipe passes to the stock-yard ready for shipping. Test bars are cast regularly from metal similar to that used in the pipe-manufacture, and whereas the test bar is required to be 28,000 lb. to specification, the average bar at Onakaka is 31,000 lb. 16,150 tons of ore were used during the time under review, the resultant production of pig iron being 8,075 tons, with a value of £5 per ton. One hundred and twenty-five men were employed at the works and quarry.

*Petroleum.*—A certain amount of geological exploratory work has been undertaken on an area located in the Tutaki Survey District (Murchison), with nil results regarding discoveries of importance. Operations on all other properties in the district remain suspended.

### Prospecting.

Greatly increased activity has been shown in this branch of work. A Dunedin company, whose object is the development of likely gold-mining properties, has had a staff of two experienced miners driving tunnels and sinking shafts for the greater part of the year on an alluvial terrace north of and fronting the Waitahu River, about four miles and a half from Reefton. The whole of the material taken from the tunnels has been washed, and has yielded almost 1 dwt. of gold per cubic yard. On account of the water in the ground it was not possible to reach bottom in the shafts put down; neither could the main body of wash be reached. The material sunk through in every instance nevertheless yielded payable prospects. Rises are to be put up to the surface from the drives to complete the test of the overburden, and the gravels obtained therefrom are to be washed in order to ascertain their values. It is intended to work the ground by sluicing should the final test prove satisfactory, but some months must elapse before the work referred to is completed. An engineer has been engaged to make a survey of the area, which is at present held under a prospecting license.

An extensive alluvial area near Blackwater (Mount David) has been acquired by another company registered at Dunedin. The area is to be worked by sluicing, and the company has been engaged for several months in constructing a large water-race, several miles in length, as preliminary to working its claim. Upwards of one hundred men have been employed at times on the water-race.

Keystone drilling on an area at the Awatuna Beach has revealed moderate values over an average depth of 22 ft. The ground was in part treated by the Awatuna Dredge several years ago, but high fuel costs would appear to have then operated against the successful working of the plant. The dredge is to be recommissioned by a new company and fitted with electric power (in lieu of steam), and reasonable hopes are entertained that the altered conditions will allow the dredge to operate as a profitmaking unit when it again commences work.

Considerable field-prospecting has taken place, but discoveries from this source have been nil.

### Accidents.

Two fatal and two non-fatal accidents occurred in the district during the year. The two fatalities mentioned were separate and distinct. The first, in which an old man named John Lyes was the victim, occurred at an alluvial claim near Greymouth on 17th January. The victim, during a certain stage of his mining operations, found it necessary to remove an old tree-stump from near his sluice-boxes. This he proceeded to do with the aid of gelignite, but on the shot discharging he was struck and killed by a falling log. The second fatality occurred at the Cobden Quarry on 14th August. The victim (Richard Comerford) in this case was caught and crushed with an unexpected fall of debris, death being instantaneous. Two men, both named George White, were the victims of the non-fatal accidents. The occurrences were both simple. In one case the victim struck his lower left leg against a truck that had come off the track, and suffered a fracture. He was employed at the Progress Mill, and the mishap occurred on 8th July. The second occurrence was due to the victim (White) striking a plug of frozen gelignite with a pick he was wielding whilst engaged at levelling some debris on the surface at the Blackwater Mine on 2nd August. As a result thereof White suffered a fracture of the right leg and the loss of his right eye, together with the destruction of his two index fingers. The whole of the occurrences described above were purely accidental.

### General Remarks.—Mining.

Recoveries from alluvial mining showed a falling-off when compared with the previous year, the value of gold won being £6,237 10s. 9d., as against £9,029 19s. 11d. recorded in connection with the earlier period.

The gold obtained from quartz-mining showed a decrease also, the amount won from that source being 19,624 oz., as against 20,467 oz. for 1929. The decrease last mentioned was no doubt due to a non-resumption of work at the Murray Creek Mine, together with the cessation of operations connected with the Dominion Consolidated's property. The exhaustion, towards the end of the year, of the rich stone contained in the McVicar block, Alexander Mine, was perhaps a contributory factor also.

## SOUTHERN INSPECTION DISTRICT (T. McMillan, Inspector of Mines).

### Quartz and Alluvial Mining.

*Waitaki County.*

*Livingstone and Maerewhenua.*—Five men were employed in this locality at sluicing in the greensand deposits. Two of them were engaged driving a tunnel 11 chains in length to take water on to an unworked area. The gold won amounted to 112 oz. 17 dwt., valued at £436.

*Waihemo County.*

*The Ounce Mine, Stoneburn.*—No work has been done at this mine during the year. 4 oz. 16 dwt. 12 gr. gold was obtained by cleaning up the battery; value, £18 4s. 8d.

*Golden Point Gold and Scheelite Mining Co., Macraes.*—This company employed five men on development work for the greater part of the year, driving, rising, and crosscutting. The finances of the company have been strengthened, and a progressive programme of development and equipment has been decided on for 1931.

*Macraes.*—Three small parties of miners were prospecting for scheelite during the first half of the year, and until the price of this mineral was reduced to an unprofitable figure. Eleven tons of ore were treated at Hugh Fraser's battery for returns amounting to 3 tons 6 cwt. 3 qr. of scheelite and 17 dwt. of gold.

*Maniototo County.*

*Kildare Consolidated Gold-mining Co., St. Bathans.*—The small prospecting-shaft commenced last year was sunk to a depth of 70 ft., when the lead was encountered. The wet running sand filled up and wrecked the shaft, which was then abandoned. This portion of the claim was then sluiced and elevated until operations had to be discontinued on account of approaching the main road. Two elevators were in operation lifting the auriferous gravel to a total height of 170 ft. Sluicing and elevating is now in progress on the barrier which was left between the Scandinavian and the M. and E. claims. The gold won for the year amounted to 399 oz. 5 dwt. 12 gr., valued at £1,576 7s. 5d.

Three small parties at St. Bathan's produced 79 oz. 0 dwt. 22 gr. of gold, valued at £308 8s. 6d.

*Cambrian.*—Sluicing operations were carried on in this locality by three small parties. The gold won amounted to 60 oz. 7 dwt. 12 gr., valued at £234 15s.

*Golden Progress Quartz-mining Co., Oturehua.*—A winding-engine and boiler were installed, and the main shaft was sunk to a depth of 160 ft. A chamber was constructed at 150 ft. The reef, cut at 67 ft. from the shaft and driven on for a distance of 37 ft. west, averaged 20 in. in width, and samples taken from it gave payable results by assay. At 39 ft. a disturbance was encountered, but the reef has now been picked up and is being driven on to the west in order to connect with the inclined prospecting shaft. A 10-head battery will be erected, and crushing operations should commence about April, 1931.

*Naseby and Kyeburn.*—Twenty-one men were employed hydraulic sluicing and elevating. The gold won amounted to 759 oz. 11 dwt. 2 gr., valued at £2,916 14s. 4d. The largest producers were A. and G. Brown, with 178 oz. 17 dwt., valued at £723 19s.

*Tuapeka County.*

*Blue Spur.*—The Gabriel's Gully Sluicing Co. is still working tailings, which yield enough to pay working-expenses and a small dividend. When these tailings are exhausted it is intended to work the cement deposits left from previous workings. Probably some form of crushing machinery will be used, and the whole of the auriferous contents will be extracted in the first working of the cement. The gold won amounted to 563 oz. 7 dwt., valued at £2,196 0s. 4d.

*Golden Crescent Sluicing Co., Wetherstones.*—Driving in the auriferous-cement deposit on the schist bottom has been in progress during the year, and a distance of 660 ft. has been driven in an easterly direction for the purpose of proving if the cement carries sufficient gold to pay for working it by driving and blocking out. Values rose steadily during the early part of the year, reaching 12s. per cubic yard, but since then they have been variable. Operations suffered during the winter months on account of the severe weather, but are now proceeding satisfactorily.

*Golden Rise Claim, Wetherstones* (W. R. Smyth, Owner).—A block of ground alongside the Lawrence to Waipori Road is being worked by hydraulic sluicing and elevating. The yield of gold during the year amounted to 178 oz. 15 dwt., valued at £696 6s. 7d.

*Paddy's Point Gold-mining Co., Forsyth.*—Hydraulic sluicing and elevating operations have been carried on steadily during the year. The yield of gold for the year amounted to 427 oz., valued at £1,738.

*Sailor's Gully Sluicing Co., Waitahuna.*—Ground-sluicing was in progress during the year in the weathered portion of the cement deposit. The yield of gold for the year amounted to 439 oz. 6 dwt. 12 gr., valued at £1,735 12s. 7d.

*H. M. Quilter, Waitahuna.*—Sluicing and elevating was carried on during the year in small blocks of ground left by previous miners. The yield of gold amounted to 122 oz. 12 dwt., valued at £528 0s. 4d.

*Tallaburn Sluicing Co., Horse-shoe Bend.*—Sluicing and elevating operations have been carried on during the year for a yield of 240 oz. 14 dwt. 12 gr. of gold, valued at £937 15s. 9d.

*Murchison Bros., Fourteen Mile Beach.*—This party's claim is situated in the gorge of the Molyneux River about half-way between Roxburgh and Alexandra. The ground is very rough, and can only be worked when the river is low. The year's workings yielded 96 oz. 12 dwt. 6 gr. of gold, valued at £425.

R. H. Parker, at the Fourteen Mile, secured 60 oz. 6 dwt. 3 gr. of gold, valued at £232 6s. 1d., when the closing of the gates at the Kawarau Dam and the scant rainfall caused a low river.

*Vincent County.*

*Kawarau High Levels Co., Waitiri.*—Sluicing operations were carried on for some time, but, on account of the rough nature of the deposit, the claim could not be profitably worked, and operations were suspended. The company has now been reconstructed and is known as the Central Mines, Ltd. Operations will be resumed in 1931.

*Cornish Point Gold-mining Co., Cromwell.*—Operations were continued at this mine. The inclined shaft was sunk until it reached the schist bottom. Drives were driven to locate the channel, and crosscuts were driven to locate the rising reef. An electric winch was installed for haulage purposes. Work was discontinued in December, but will be resumed when the river falls to its winter level. 13 oz. 8 dwt. of gold, valued at £55 15s. 10d,. was obtained.

*Nevis.*—Seven parties of men were employed sluicing and elevating for a yield of 220 oz. 9 dwt. 19 gr. of gold, valued at £847 10s. 6d. Graham and party, with 123 oz. 17 dwt., valued at £477 8s., were the largest producers.

Boring operations were in progress on J. Stevenson's claim at Upper Nevis in the early part of the year with the Department's No. 2 Keystone drill. Holes were bored to depths of 15 ft. to 32 ft. The results were considered to be favourable.

*Lake County.*

*Kawarau Gold-mining Co.*—The gates of the company's dam were closed for a period to enable the Cromwell Development Co. to repair its weir in the Kawarau River. No work was done on any of the company's claims.

*Glenorchy Scheelite Mining Co., Ltd., Glenorchy.*—The company's operations were confined to the Glenorchy Mine. During the early part of the year nine men were employed in mining and development work. One hundred and six tons of ore were produced, yielding 6 tons 16 cwt. of concentrates, valued at £630. On account of the heavy fall in the price of scheelite the mine was closed down during the winter months. Two men are now employed on development work.

Other parties in the Glenorchy district mined 72 tons of scheelite ore, yielding 13 tons 10 cwt. 2 qr. of concentrates. On account of the present low price of scheelite no work is being done on any of these claims, and much scheelite remains unsold.

Six men were employed in the Rees River area on development work on an extension of the Invincible reef.

*Big Beach Gold-mining Co., Shotover River.*—Sluicing operations have been carried on throughout the year. The gold won amounted to 591 oz. 13 dwt., valued at £2,338 5s. 10d.

*Moonlight Mining Syndicate, Moonlight Creek.*—Sluicing operations have been carried on by this company in an old channel of Moonlight Creek. The gold won amounted to 324 oz. 3 dwt., valued at £1,270 11s. 10d.

*Sandhills Gold-mining Co., Upper Shotover.*—This company's operations have been hindered by a period of high rivers. The gold won amounted to 23 oz. 6 dwt., valued at £85 12s. 2d.

*A. E. Smith and Party* were engaged sluicing and elevating in the bed of the Shotover River at Maori Point. The gold produced amounted to 249 oz. 0 dwt. 5 gr., valued at £981 7s. 4d.

*Weddell, Oxenbridge, and Party.*—This party has been sluicing and elevating in the bed of the Shotover River at Staircase Creek. Their operations have been hindered by a period of high river. The gold won amounted to 11 oz., valued at £44.

*The Good Hope Mining Co.* are prospecting in the bed of the Shotover River at Arthur's Point.

*The Hawke Mining Syndicate* reopened the old Shamrock claim. They have done a large amount of development work, having deepened and extended the tail-race, constructed two dams, &c. The gold won since sluicing operations commenced amounts to 36 oz. 13 dwt., valued at £141 2s.

*Southland County.*

*Nokomai Sluicing Co., Nokomai.*—This company has been actively employed during the year elevating the alluvial gravel to a height of 90 ft. Owing to the high lift and seepage of water into the workings from the creek, amounting to about six heads, the cost of hydraulic elevating is expensive, and consequently the company is not obtaining satisfactory results. The gold recovered amounted to 601 oz. 18 dwt. 18 gr., valued at £2,287 19s. 8d.

*Copeland and Party* carried out sluicing and elevating in the Victoria Gully. The gold won amounted to 142 oz. 19 dwt., valued at £561 16s. 9d.

*King Solomon Deep Leads, Waikaia.*—This company commenced operations in May. Two men drove an adit level from the gully and intersected the shaft at about 45 ft. from the surface. Active shaft operations were commenced in September, bailing-tanks being used to lower the water. An electric sinking-pump was also installed. Sinking operations were resumed in November, and at the end of the year the shaft had reached a depth of 192 ft. A chamber was opened out at 186 ft., and 16 ft. had been driven at the end of the year.

*Winding Creek Gold-mining Co., Waikaia.*—This company drove out the auriferous gravel from the old channel of the Winding Creek. They then commenced driving a dip at the bottom of an old elevating paddock. A narrow lead was disclosed and driven on for a considerable distance. The dip was then continued to a depth of 170 ft. It was driven on the schist floor on a grade which varied from 1 in 6 to 1 in 3. This dip had to be abandoned on account of the heavy nature of the ground. Prospecting operations are now being carried on near the previous workings. The gold won amounted to 79 oz. 13 dwt. 11 gr., valued at £328 12s. 8d.

*Stoney Creek Gold-mining Co., Waikaia.*—About 200 yards of driving was done by this company, but old workings were encountered, and work has been suspended. The gold won amounted to 11 oz. 13 dwt. 4 gr., valued at £44 5s. 11d.

Several small parties carried on sluicing operations in the Nokomai, Paddy's Alley (Athol) districts. The gold won amounted to 239 oz. 14 dwt. 19 gr., valued at £926 9s. 11d. Mutch Bros. were the largest producers, with 148 oz., valued at £573 10s. 10d.

*Waikaia.*—Twelve miners produced 128 oz. 4 dwt. 6 gr., valued at £513 0s. 8d., in the Waikaia district. Of these, H. Nelson, with 48 oz. 7 dwt. 13 gr., valued at £187 9s. 2d., and Jas. Mutch, with 70 oz., valued at £271 5s., were the largest producers.

*Wallace County.*

During the latter part of the year the Magnetic Cylinder Co. tried out a pumping-plant on the Wakapatu Mining Co.'s claim at Wakapatu.

Only a few individual miners are working at Round Hill. The gold won amounted to 31 oz. 9 dwt. 2 gr., valued at £123 10s. 7d.

*Orepuki.*—A few small parties of miners continue to work the alluvial and sea-beach deposits in this locality. The gold won amounted to 91 oz. 4 dwt. 4 gr., valued at £357 12s. 3d.

*Dredging.*

*Upper Nevis Gold-dredging Co., Nevis River.*—This company's electrically-equipped dredge has been working in comparatively shallow ground. The gold recovered amounted to 290 oz. 10 dwt., valued at £1,149 1s. 6d. This dredge should soon be dredging in virgin ground.

*Golden Terrace Extended Gold-dredging Co., Lower Shotover.*—The erection of the dredge was completed in July and dredging operations were commenced. Several adjustments have been made. The gold won amounted to 407 oz. 16 dwt., valued at £1,714 5s. 10d.

*Minerals other than Gold.*

*Tungsten.*—The scheelite produced during the year amounted to 23 tons 13 cwt. 1 qr. The total value cannot be given, as on account of the heavy drop in the price of scheelite much of this output is held until the market improves.

*Silica.*—The Southern Cross Glass Co., Ltd., Ashburton: The output of silica sand from the company's silica license at Mount Somers amounted to 53 tons 19 cwt. 3 qr., which was valued at 10s. per ton at the site of the deposit.

*Platinum.*—2 oz. 10 dwt. of platinum were recovered from alluvial and sea-beach claims at Orepuki and Wakapatu Beach.

ACCIDENTS.

No serious accidents occurred in the mines or dredges during the year.

GENERAL REMARKS.

The very dry season at the beginning of the year hindered sluicing and elevating operations in the Southern District, and adversely affected the returns.

# ANNEXURE B.

## STONE QUARRIES.

### SUMMARY OF REPORT BY INSPECTOR OF QUARRIES FOR THE NORTH ISLAND.

(JAMES NEWTON.)

The quantity of stone won during the year under review presents a slight increase when compared with the previous year's output, and, whilst twenty-six more quarries have been worked, seventy-three fewer men have been employed. The output of stone per person employed, however, shows a decided increase, being 838 tons, as against 766 last year.

Harbour works present a decreased output of 3,683 tons, the stone won for manufacture of cement or mortar shows a decided decrease of 32,828 tons. Stone won for agricultural purposes presents an increase of 5,524 tons. Stone won for roading purposes was increased by 21,374 tons, and, whilst no stone was recorded under "Miscellaneous" last year, the output under this heading for the present year represents 26,321 tons. The total output, 1,086,217 tons, shows an increase in output over last year's winnings of 16,604 tons, but whilst the output has been greater to that extent the value of the stone at the quarry has decreased by £40,403.

Only a small proportion of the quarries operated can be designated permanent undertakings. By far the greater number are worked during a very limited period of the year, in consequence of which nothing like permanent employment has been available to the majority of those persons employed in this class of work.

Generally speaking, I have found on inspection that reasonable care is being shown in the working of the numerous stone faces. When the nature of the stone won in our quarries is taken into consideration, the work at its best is in my opinion a precarious occupation, owing to the fact that the greater number of quarry-faces are high, and for the most part consist of greatly shattered and extensively jointed stone traversed in many cases by treacherous erratically disposed greasy heads which at times defy observation until the frontal stone has been removed. These conditions necessitate the careful vigilance of the quarry-worker in order to prevent accidental happenings. On account of such conditions I have favoured working the most of the quarry breasts with a backward gradient, systematic benching of the face being resorted to only where the stone is horizontally bedded.

The following accidents, notifiable under section 4 of the Stone Quarries Amendment Act, 1922, have happened during the year under review:—

On the 12th January, in the Auckland City's Mount Eden Quarry, F. Florey received a broken toe, the result of getting his foot run over by a truck whilst endeavouring to lower it down an incline.

On the 4th March K. Young, employed in Pascoe's Epsom Quarry, received a broken leg, the result of being struck by a rolling stone that was barred from the tops of the quarry by one of the employees.

On the 26th June J. Zegura received a broken leg, the result of a rolling stone. He was engaged spawling stone on the floor of the quarry, and in attempting to place a stone by means of a crowbar in a position to spawl same it rolled on to his leg with the above result. This occurrence happened in Bray's Penrose Quarry.

In the same quarry on the 24th July M. Dracevich received a nasty flesh wound, the result of a rolling stone striking him whilst barring down the face.

On the 8th December J. Tipene, in the Paekakariki Quarry, had the misfortune to lose the index finger and thumb entirely and the distal joint of the ring and middle fingers, the result of a premature explosion. Tipene was about to bull a hole, and he states that he held on to the bulling charge too long.

*Tunnel Quarries.*—During the year tunnelling in connection with sewerage-works in the Auckland District has been carried on continuously, and has entailed a fair amount of inspection. Most of the drivages have been through hard blue basalt, and on account of the drives being somewhat small in size very little timber has been necessary for support. I have found on inspection that satisfactory conditions have prevailed in connection with the handling and storage of the necessary explosives, and that ventilation has been adequate.

A fairly large number of examinations have had to be conducted with candidates for quarry-managers permits. Such applications have entailed a considerable amount of clerical work, and the examinations have been conducted at times and places most suitable both to the examiner and candidate.

I think it would be a matter of gross discourtesy did I not mention in conclusion that the officers connected with the various public bodies have ungrudgingly tendered to me every facility in the manner of transport to their several quarries. At times with inconvenience to themselves I have been motored by them long distances into the back country, in consequence of which I have been enabled to attend to my duties economically and expeditiously.

# ANNEXURE C.

## MINING STATISTICS.

### Table 1.

STATEMENT SHOWING THE QUANTITY OF QUARTZ CRUSHED AND BULLION OBTAINED IN THE NORTHERN INSPECTION DISTRICT FOR THE YEAR ENDED 31ST DECEMBER, 1930.

| Locality and Name of Mine. | Average Number of Men employed. | Quartz crushed. | Bullion obtained. | | Value. |
|---|---|---|---|---|---|
| | | | Amalgamation. | Cyanidation. | |
| | | WAIHI BOROUGH. | | | |
| Waihi— | | Tons cwt. qr. lb. | Oz. dwt. gr. | Oz. dwt. gr. | £ s. d. |
| Waihi Gold-mining Co., Ltd. .. | 541 | 180,749 0 0 0 | .. | 433,227 2 18 | 329,603 9 2 |
| Waihi Grand Junction Gold Co. | 49 | 16,558 0 0 0 | .. | 125,873 12 4 | 48,307 12 4 |
| | 590 | 197,307 0 0 0 | .. | 559,100 14 22 | 377,911 1 6 |
| | | OHINEMURI COUNTY. | | | |
| Karangahake— | | | | | |
| Talisman-Dubbo .. .. | 3 | 2 0 0 0 | 4 12 0 | .. | 10 1 11 |
| Waitekauri— | | | | | |
| Maoriland .. .. .. | 1 | 1 10 0 0 | 14 10 0 | .. | 14 4 3 |
| Maratoto— | | | | | |
| Ohinemuri Gold and Silver .. | 22 | 1,502 0 0 0 | .. | 32,599 4 0 | 2,813 4 4 |
| Owharoa— | | | | | |
| Rising Sun .. .. .. | 3 | 154 0 0 0 | .. | 434 12 0 | 601 12 4 |
| | 29 | 1,659 10 0 0 | 19 2 0 | 33,033 16 0 | 3,439 2 10 |
| | | THAMES BOROUGH. | | | |
| Thames— | | | | | |
| Moanataiari .. .. .. | 5 | 32 0 0 0 | 16 7 0 | .. | 46 11 0 |
| Occidental-Una .. .. | 2 | 7 10 0 14 | 15 15 0 | .. | 46 4 4 |
| Lucky Shot .. .. .. | 4 | 112 0 0 0 | 224 9 12 | .. | 613 16 8 |
| Cambria .. .. .. | 3 | 0 0 1 13 | 19 15 0 | .. | 51 16 3 |
| Bright Smile .. .. | 1 | 7 10 0 0 | 140 11 0 | .. | 370 7 0 |
| North Star .. .. .. | 2 | 2 0 0 0 | 3 14 0 | .. | 8 11 0 |
| Garbo .. .. .. | 2 | 15 0 0 0 | 12 1 0 | .. | 32 18 0 |
| School of Mines Battery .. | 2 | 0 2 1 13 | 169 12 0 | .. | 416 19 4 |
| New Alburnia .. .. | 6 | 1 1 2 14 | 49 9 0 | .. | 128 16 6 |
| Prospectors .. .. .. | 7 | 0 0 0 10 | 2 1 0 | .. | 5 4 2 |
| | 34 | 177 4 2 8 | 653 14 12 | .. | 1,721 4 3 |
| | | THAMES COUNTY. | | | |
| Waiomo— | | | | | |
| Zeehan .. .. .. | 40 | 2,425 0 0 0 | .. | 5,763 14 3 | 3,241 3 2 |
| Prospectors .. .. .. | 1 | .. | 9 9 0 | .. | 25 0 10 |
| | 41 | 2,425 0 0 0 | 9 9 0 | 5,763 14 3 | 3,266 4 0 |
| | | COROMANDEL COUNTY. | | | |
| Coromandel— | | | | | |
| Hauraki .. .. .. | 10 | 201 0 0 20 | 86 5 0 | .. | 257 2 3 |
| | | PIAKO COUNTY. | | | |
| Te Aroha— | | | | | |
| Peter Maxwell .. .. | 1 | 0 15 0 0 | 5 17 0 | .. | 16 2 6 |
| | | SUMMARY. | | | |
| Waihi Borough .. .. | 590 | 197,307 0 0 0 | .. | 559,100 14 22 | 377,911 1 6 |
| Ohinemuri County .. .. | 29 | 1,659 10 0 0 | 19 2 0 | 33,033 16 0 | 3,439 2 10 |
| Thames Borough .. .. | 34 | 177 4 2 8 | 653 14 12 | .. | 1,721 4 3 |
| Thames County .. .. | 41 | 2,425 0 0 0 | 9 9 0 | 5,763 14 3 | 3,266 4 0 |
| Coromandel County .. .. | 10 | 201 0 0 20 | 86 5 0 | .. | 257 2 3 |
| Piako County .. .. .. | 1 | 0 15 0 0 | 5 17 0 | .. | 16 2 6 |
| Totals, 1930 .. .. | 705 | 201,770 9 3 0 | 774 7 12 | 597,898 5 1 | 386,610 17 4 |
| Totals, 1929 .. .. | 752 | 194,400 18 3 16 | 1,386 11 10 | 526,816 6 1 | 356,359 4 1 |

STATEMENT SHOWING THE QUANTITY OF QUARTZ CRUSHED AND BULLION OBTAINED IN THE WEST COAST INSPECTION DISTRICT FOR THE YEAR ENDED 31ST DECEMBER, 1930.

| Locality and Name of Mine. | Average Number of Men employed. | Quartz crushed. | Bullion obtained by | | Value. |
|---|---|---|---|---|---|
| | | | Amalgamation. | Cyanidation and Concentration. | |
| **MARLBOROUGH COUNTY.** | | | | | |
| Wakamarina— | | Tons. cwt. qr. | Oz. dwt. gr. | Oz. dwt. gr. | £ s. d. |
| Dominion Consolidated .. | 8 | 780 0 0 | 141 2 0 | .. | 528 9 4 |
| **INANGAHUA COUNTY.** | | | | | |
| Waiuta— | | | | | |
| Blackwater Mine .. .. | 170 | 41,112 0 0 | 14,135 2 0 | 3,646 7 0 | 70,094 0 1 |
| Crushington— | | | | | |
| Progress .. .. .. | .. | .. | .. | 467 6 14 | 1,259 18 1 |
| Wealth of Nations .. .. | 6 | 1,070 0 0 | .. | 131 11 10 | 369 10 10 |
| Alexander River— | | | | | |
| Alexander .. .. .. | 34 | 3,686 0 0 | 2,457 2 6 | 639 0 4 | 13,927 11 6 |
| **ROSS BOROUGH.** | | | | | |
| Ross— | | | | | |
| Mt. Greenland .. .. | 3 | 15 0 0 | 6 10 0 | .. | 26 0 0 |
| Totals, 1930 .. | 221 | 46,663 0 0 | 16,739 16 6 | 4,884 5 4 | 86,205 9 10 |
| Totals, 1929 .. | 211 | 47,806 0 0 | 15,228 6 0 | 5,239 4 0 | 80,854 1 1 |

STATEMENT SHOWING THE QUANTITY OF QUARTZ CRUSHED AND BULLION OBTAINED IN THE SOUTHERN INSPECTION DISTRICT FOR THE YEAR ENDED 31ST DECEMBER, 1930.

| Locality and Name of Mine. | Average Number of Men employed. | Quartz crushed. | Bullion obtained by | | Value. |
|---|---|---|---|---|---|
| | | | Amalgamation. | Concentration. | |
| **LAKE COUNTY.** | | | | | |
| Upper Shotover— | | Tons cwt. qr. | Oz. dwt. gr. | Oz. dwt. gr. | £ s. d. |
| J. Thompson and J. R. Tripp .. | 1 | 1 0 0 | 1 0 7 | .. | 3 18 7 |
| **WAIHEMO COUNTY.** | | | | | |
| Stoneburn— | | | | | |
| Ounce .. .. .. | 1 | .. | 4 16 12 | .. | 18 4 8 |
| Macrae's Flat— | | | | | |
| Hugh Fraser .. .. .. | 1 | 11 0 0 | 0 17 0 | .. | 3 2 0 |
| Totals, 1930 .. | 3 | 12 0 0 | 6 13 19 | .. | 25 5 3 |
| Totals, 1929 .. | 2 | 135 0 0 | 19 0 0 | .. | 73 12 6 |

SUMMARY OF INSPECTION DISTRICTS.

| Inspection District. | Average Number of Men employed. | Quartz crushed. | Bullion obtained. | Value. |
|---|---|---|---|---|
| | | Statute Tons. | Oz. dwt. gr. | £ s. d. |
| Northern (North Island) .. .. | 705 | 201,770 | 598,672 12 13 | 386,610 17 4 |
| West Coast (South Island) .. .. | 221 | 46,663 | 21,624 1 10 | 86,205 9 10 |
| Southern (Otago and Southland) .. | 3 | 12 | 6 13 19 | 25 5 3 |
| Totals, 1930 .. .. | 929 | 248,445 | 620,303 7 18 | 472,841 12 5 |
| Totals, 1929 .. .. | 965 | 242,342 | 548,689 7 11 | 437,286 17 8 |

In addition, 40 persons were employed at unproductive quartz-mining.

## Table 2.

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

| Name of Company. | Date of Registration. | Subscribed Capital. | Amount of Capital actually paid up. | Value of Script given to Shareholders on which no Cash paid. | Number of Shares allotted. | Amount paid per Share. | Arrears of Calls. | Number of Shareholders at present. | Number of Men employed. | Quantity and Value of Gold and Silver produced since Registration. | | Total Expenditure since Registration. | Total Amount of Dividends paid. | Amount of Debts owing by Company. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Quantity. | Value. | | | |
| **AUCKLAND DISTRICT.** | | | | | | | | | | | | | | |
| | | £ | £ | £ | | | £ | | | Oz. | £ | £ | £ | £ |
| Hauraki Mines Consolidated, Ltd. .. .. | 28/11/25 | 87,354 | 55,201 | 28,750 | 349,419 | Various | 347 | 1,148 | Nil | 353 | 1,547 | 43,565 | Nil | 1,241 |
| Talisman Dubbo Gold-mines, Ltd. .. .. | 31/10/29 | 6,200 | 1,400 | Nil | 24,800 | 5/– | Nil | 16 | 2 | .. | 10 | 709 | Nil | 62 |
| Golden Dawn Gold-mines, Ltd. .. .. .. | 20/11/29 | 10,803 | 5,088 | Nil | 43,215 | Various | 422 | 171 | 18 | .. | 584 | 1,988 | Nil | 992 |
| Mount Welcome Gold-mining Co., Ltd. .. .. | 21/10/20 | 3,600 | 2,840 | 2,500 | 24,400 | 4/3 and 5/– | 31 | 68 | 3 | 50 | 142 | 3,343 | Nil | 29 |
| Kuranui Gold-mining Co. (No Liability), (in liquidation) | 5/6/25 | 8,026 | 4,766 | 210 | 82,364 | 1/3½ | Nil | 20 | Nil | 10 | 25 | 4,784 | Nil | 45 |
| Caledonia-Kuranui-Moanataiari Consolidated Gold-mining Co., Ltd. | 16/3/20 | 43,062 | 31,778 | 2,500 | 182,250 | Various | 347 | 463 | 4 | 347 | 1,030 | 36,811 | Nil | 2,290 |
| Tui Gold-mining Co., Ltd. (in liquidation) .. | 1/5/29 | 7,815 | 2,006 | 3,750 | 46,260 | 3/– | 63 | 42 | Nil | 2 | 6 | 1,999 | Nil | 332 |
| Lucky Shot Mines, Ltd. .. .. .. | 12/6/28 | 21,853 | 4,165 | 10,000 | 109,267 | 1/6 | 272 | 230 | 9 | .. | 1,200 | 14,357 | Nil | Nil |
| Waiomo Sulphide Corporation, Ltd. .. .. | 1/2/29 | 42,521 | 20,021 | 22,500 | 170,506 | 5/– and 3/– | 117 | 159 | 40 | * | * | 55,039 | Nil | 12,955 |
| Maoriland Consolidated, Ltd. (in liquidation) .. | 24/3/25 | 13,750 | 5,500 | 5,000 | 80,000 | Various | .. | 48 | Nil | 149 | 444 | 5,797 | Nil | 93 |
| **NELSON DISTRICT (INCLUDING WEST COAST).** | | | | | | | | | | | | | | |
| Buller Diversion Gold-mining Co., Ltd. .. .. | 13/3/28 | 10,233 | 7,395 | 3,125 | 47,932 | Various | 960 | 155 | 4 | Nil | Nil | 7,097 | Nil | 47 |
| Mahakipawa Goldfields, Ltd. .. .. .. | 12/10/23 | 42,804 | 33,470 | 15,603 | 856,089 | Various | 1,804 | 864 | 2 | 440 | 1,700 | 47,305 | Nil | 1,800 |
| Okarito Five-mile Beach Gold-dredging Co., Ltd. .. | 29/10/28 | 30,000 | 25,500 | 4,500 | 120,000 | 5/– | Nil | 318 | 24 | 430 | 1,810 | 28,745 | Nil | 1,614 |
| Southern Mines Development Corporation, Ltd. .. | 27/7/26 | 30,335 | 22,407 | Nil | 30,335 | Various | 5,835 | 287 | Nil | Nil | Nil | .. | Nil | 11,645 |
| Hercules Mines Consolidated, Ltd. .. .. | 27/7/26 | 15,007 | 7,674 | Nil | 15,007 | Various | Nil | 7 | Nil | 522 | 1,823 | .. | Nil | 209 |
| Blackwater Oil (N.Z.) Exploration Co., Ltd. .. | 27/7/26 | 15,507 | 929 | Nil | 15,507 | Various | Nil | 7 | Nil | .. | .. | .. | Nil | 500 |
| North Big River Gold-mines, Ltd. .. .. | 29/10/19 | 34,903 | 13,178 | 34,000 | 34,903 | 20/– and 15/10 | Nil | 77 | Nil | Nil | Nil | 10,148 | Nil | 101 |
| Murray Creek Gold-mines, Ltd. .. .. .. | 14/12/26 | 35,007 | 7,005 | 25,000 | 35,007 | 16/– and 14/– | 989 | 67 | Nil | 173 | 661 | 7,704 | Nil | 1,990 |
| New Murray Creek Gold-mines, Ltd. .. .. | 25/7/23 | 15,000 | 4,821 | 10,000 | 15,000 | 20/– and 10/– | 75 | 64 | Nil | 328 | 1,199 | 2,955 | Nil | 1,450 |
| Skipper's Westland Gold-mining Co., Ltd. .. | 1/3/28 | 7,933 | 5,183 | 2,750 | 7,933 | 20/– | Nil | 21 | Nil | 89 | 352 | 5,713 | Nil | 1,539 |
| Rimu Gold-dredging Co., Ltd. .. .. .. | 20/7/20 | 213,572 | 142,863 | 70,709 | 213,572 | 20/– | Nil | 35 | 53 | 109,243 | 436,972 | 315,918 | 24,622 | 171 |
| Britannia Gold-mining Co., Ltd. .. .. .. | 21/12/27 | 8,937 | 4,011 | 4,642 | 8,937 | 20/– | 52 | 55 | 1 | Nil | Nil | 4,840 | Nil | 829 |
| Alexander Mines, Ltd. .. .. .. .. | 9/3/26 | 75,000 | 30,357 | 29,000 | 75,000 | 13/– | Nil | 256 | 41 | 7,339 | 30,650 | 49,659 | Nil | 244 |
| New Big River Gold-mining Co., Ltd. .. .. | 19/8/07 | 2,400 | 2,400 | Nil | 24,000 | 2/– | Nil | 69 | 1 | 93,687 | 375,742<br>20,430† | 296,023 | 112,800 | 6,473 |
| Ngahere Gold-prospecting Co., Ltd. .. .. | 22/12/25 | 24,465 | 4,493 | 18,000 | 48,931 | 10/– and 2/– | Nil | 32 | Nil | Nil | Nil | 4,480 | Nil | Nil |
| **OTAGO DISTRICT.** | | | | | | | | | | | | | | |
| Kildare Consolidated Gold-mining Co., Ltd. .. | 19/6/28 | 8,000 | 4,000 | 4,000 | 80,000 | 2/– | Nil | 135 | 9 | 937 | 3,609 | 6,320 | Nil | 20 |
| Skipper's Sluicing Co., Ltd. .. .. .. | 20/11/11 | 3,450 | 345 | 3,105 | 3,450 | 20/– | Nil | 31 | ‡ | 2,275 | 9,311 | 10,033 | Nil | 1,934 |
| Good Hope Gold-mining Co., Ltd. .. .. | 7/4/30 | 2,825 | 849 | Nil | 2,825 | 6/– | 16 | 73 | 3 | Nil | Nil | 482 | Nil | 1,534 |
| Golden Progress Quartz-mining Co., Ltd. .. .. | 26/10/28 | 14,755 | 12,223 | 3,950 | 14,755 | 20/– and 16/– | 375 | 152 | 12 | Nil | Nil | 8,559 | Nil | 101 |
| Molyneux Electric Gold-dredging Co., Ltd. .. | 23/7/25 | 10,947 | 8,447 | 2,500 | 10,947 | 20/– | Nil | 108 | 1 | 301 | 1,164 | 4,928 | Nil | 6 |
| King Solomon Deep Lead, Ltd. .. .. .. | 14/11/29 | 9,092 | 6,272 | 2,762 | 181,851 | 1/– | 15 | 150 | 12 | 5 | 19 | 2,613 | Nil | 917 |
| Lady Ranfurly Gold-mining Co. (Kawarau), Ltd. .. | 12/6/28 | 6,748 | Nil | 6,748 | 134,976 | 1/– | Nil | 45 | 1 | Nil | Nil | 198 | Nil | Nil |
| Sailors' Gully (Waitahuna) Gold-mining Co., Ltd. .. | 3/6/96 | 8,400 | 4,400 | 4,000 | 8,400 | 20/– | Nil | 26 | 6 | 12,683 | 49,906 | 41,709 | 9,515 | 140 |
| Gabriel's Gully Sluicing Co., Ltd. .. .. | 2/5/07 | 600 | 600 | Nil | 600 | 20/– | Nil | 9 | .. | 20,599 | 81,012 | 71,745 | 20,375 | 60 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Golden Crescent Sluicing Co., Ltd. .. .. | 26/11/98 | 3,500 | 3,500 | Nil | 3,500 | 20/- | Nil | 19 | 3 | 13,738 | 54,903 | 48,640 | 14,175 | 1,938 |
| Paddy's Point Gold-mining Co., Ltd. .. .. | 4/8/28 | 13,956 | 11,446 | 2,500 | 55,825 | 5/- | Nil | 241 | 6 | 427 | 1,738 | 13,388 | Nil | 1,343 |
| McGeorge Bros., Ltd. .. .. .. | 27/3/12 | 11,400 | 11,400 | Nil | 11,400 | 20/- | Nil | 6 | 1 | 29,939 | .. | 79,649 | 48,419 | 173 |
| Good Fortune Gold-mining Co., Ltd. .. .. | 13/5/25 | 1,800 | 1,038 | 600 | 1,800 | 20/- | 12 | 12 | Nil | Nil | Nil | 736 | Nil | Nil |
| Nevis Junction Gold-mining Co., Ltd. .. .. | 23/6/26 | 3,477 | 3,211 | 1,650 | 20,510 | 5/- | 265 | 74 | Nil | Nil | Nil | 3,122 | Nil | 57 |
| Broken Hill Mining Co., Ltd. .. .. | 2/8/26 | 2,291 | 1,945 | 1,200 | 13,966 | 5/- and 4/9 | .. | 34 | Nil | Nil | Nil | 2,077 | Nil | 65 |
| Natural Bridge Gold-mining Co., Ltd. .. .. | 8/4/25 | 2,600 | 2,462 | 1,400 | 16,000 | 4/9 | Nil | 38 | Nil | 28 | 109 | 2,547 | Nil | 3 |
| Golden Chance Mining Co., Ltd. .. .. | 10/7/25 | 1,400 | 1,397 | 600 | 8,000 | 5/- | 2 | 28 | Nil | 1 | 4 | 1,366 | Nil | 20 |
| Mount David Sluicing Co., Ltd. .. .. | 2/9/30 | 30,000 | 15,169 | Nil | 50,000 | 11/- | 1,180 | 19 | 85 | Nil | Nil | 16,764 | Nil | 1,791 |
| Golden River Mining Co., Ltd. .. .. | 21/1/25 | 3,869 | 2,179 | 1,257 | 3,869 | 20/- and 17/6 | Nil | 66 | Nil | Nil | Nil | 3,106 | Nil | Nil |
| Golden Bed Mining Co., Ltd. .. .. | 12/3/25 | 4,600 | 2,340 | 1,556 | 9,200 | 10/- and 9/- | Nil | 105 | Nil | Nil | Nil | 3,087 | Nil | Nil |
| Upper Nevis Gold-dredging Co., Ltd. .. .. | 20/9/26 | 38,968 | 33,730 | 5,000 | 43,968 | 20/- and 12/6 | Nil | 153 | 9 | 2,235 | 8,923 | 48,521 | Nil | 6,496 |
| Central Mines, Ltd. .. .. .. .. | 20/2/30 | 1,257 | 1,245 | Nil | 25,150 | 1/- | 12 | 33 | Nil | Nil | Nil | 1,193 | Nil | 10 |
| Golden Point Gold and Scheelite Co., Ltd. .. | 6/8/30 | 26,675 | 2,921 | 20,000 | 173,500 | Various | 261 | 110 | 6 | Nil | Nil | 2,396 | Nil | 118 |
| Cornish Point Gold-mining Co., Ltd. .. .. | 21/12/28 | 7,912 | 3,376 | 4,500 | 158,251 | Various | 36 | 154 | Nil | 13 | 55 | 3,472 | Nil | 109 |
| Nokomai Sluicing Co., Ltd. .. .. | 14/6/26 | 25,000 | 14,840 | 10,160 | 25,000 | 20/- | Nil | 74 | 20 | 2,180 | 8,205 | 36,721 | Nil | 13,830 |
| Tallaburn Hydraulic Sluicing Co., Ltd. .. .. | 3/12/04 | 1,200 | 1,200 | Nil | 12 | £100 | Nil | 9 | 2 | 3,376 | 11,909 | 13,871 | 1,380 | Nil |
| Kawarau Gold-mining Co., Ltd. .. .. .. | 8/4/24 | 14,985 | 4,985 | 9,999 | 299,708 | 1/- | Nil | 1,052 | 1 | §94 | 366 | 7,378<br>108,558‖ | Nil | 195<br>4,635‖ |
| St. Bathan's Channel Co., Ltd. .. .. .. | 4/1/82 | 4,590 | 4,590 | Nil | 81 | Various | Nil | 4 | .. | 1,507 | .. | 11,146 | Nil | 8 |
| Vogel's Vision Gold Co., Ltd. .. .. .. | 19/11/24 | 16,020 | 13,462 | 600 | 100,000 | 4/3 and 5/- | Nil | 261 | Nil | 46 | 181 | 13,626 | Nil | Nil |
| Dart River Prospecting Co., Ltd. .. .. | 2/5/29 | 2,000 | 524 | 1,000 | 2,000 | 12/6 | 100 | 27 | Nil | Nil | Nil | .. | Nil | 61 |

* Not ascertainable until returns received from smelter, Germany. † From treatment of concentrates. ‡ Let on tribute. § Produced by company's lessees. ‖ Claimholders' account.



## FOREIGN COMPANIES.

| Name of Company. | Date of Registration of Office in Dominion. | Subscribed Capital. | Amount of Capital actually paid up in Dominion. | Value of Scrip given to Shareholders on which no Cash paid. | Number of Shares on Dominion Register. | Amount paid up per Share, Dominion Register. | Arrears of Calls, Dominion Register. | Number of Shareholders on Dominion Register. | Number of Men employed in Dominion. | Quantity and Value of Gold and Silver produced since Registration. | | Total Expenditure since Registration. | Total Amount of Dividends paid in Dominion. | Amount of Liabilities of Company in New Zealand. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Quantity. | Value. | | | |
| | | £ | £ | £ | | | £ | | | Oz. | £ | £ | £ | £ |
| New Zealand Crown Mines Co., Ltd. .. .. | 13/1/14 | 38,118 | 11,367 | 20,025 | 108,188 | 4/- | Nil | 148 | Nil | 17,781 | 17,104 | 48,759 | Nil | 10 |
| Waihi Grand Junction Gold Co., Ltd. .. .. | 22/12/97 | 41,437* | 40,494 | 112,500 | 269,874 | 2/- | Nil | 982 | 12 | .. | 2,368,532 | 2,353,327 | 147,943 | 198 |
| Waihi Gold-mining Co., Ltd. .. .. .. | 7/12/87 | 247,953 | 4,803 | 53,333 | 441,904 | 5/- | Nil | 1,837 | 588 | 24,341,328 | 16,682,368 | 10,026,028 | 1,250,960 | 36,866 |

* Written down from £384,375 to 2/- per share.

# APPENDIX B.

## REPORTS RELATING TO THE INSPECTION OF COAL-MINES.

THE INSPECTING ENGINEER AND CHIEF INSPECTOR OF COAL-MINES to the UNDER-SECRETARY OF MINES.

SIR,— Wellington, 2nd July, 1931.

I have the honour to present my annual report, together with statistical information, in regard to coal-mines of the Dominion for the year ended 31st December, 1930, in accordance with section 42 of the Coal-mines Act, 1925. The report is divided into the following sections :—

I. Output.
II. Persons employed.
III. Accidents.
IV. Working of the Coal-mines Act—(*a*) Permitted Explosives ; (*a*) List of Mines required by Law to use Permitted Explosives ; (*c*) List of Mines required by Law to use Safety-lamps ; (*d*) Dangerous Occurrences ; (*e*) Electricity at Collieries ; (*f*) Prosecutions.
V. Legislation affecting Coal-mining.
Annexures—
A. Summary of Annual Reports by Inspectors of Mines. B. Colliery Statistics.

### SECTION I.—OUTPUT.

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

| Class of Coal. | Output of Coal during 1930. | | | | Total Output to the End of 1930. |
|---|---|---|---|---|---|
| | Northern District (North Island). | West Coast District (South Island). | Southern District (South Island). | Totals. | |
| | Tons. | Tons. | Tons. | Tons. | Tons. |
| Bituminous and sub-bituminous | 140,911 | 1,241,964 | .. | 1,382,875 | 44,569,085 |
| Brown .. .. .. | 625,401 | 43,710 | 377,566 | 1,046,677 | 24,831,231 |
| Lignite .. .. .. | .. | 397 | 112,143 | 112,540 | 4,440,475 |
| Totals for 1930 .. | 766,312 | 1,286,071 | 489,709 | 2,542,092 | 73,840,791 |
| Totals for 1929 .. | 769,858 | 1,290,008 | 475,998 | 2,535,864 | 71,298,699 |

The following is a table showing the annual production of coal and the quantity of coal imported since 1911 :—

| Year. | Coal produced. | Coal imported. | Total Quantity of Coal produced and imported. | Year. | Coal produced. | Coal imported. | Total Quantity of Coal produced and imported. |
|---|---|---|---|---|---|---|---|
| | Tons. | Tons. | Tons. | | Tons. | Tons. | Tons. |
| 1911 .. | 2,066,073 | 188,068 | 2,254,141 | 1921 .. | 1,809,095 | 822,459 | 2,631,554 |
| 1912 .. | 2,177,615 | 364,359 | 2,541,974 | 1922 .. | 1,857,819 | 501,478 | 2,359,297 |
| 1913 .. | 1,888,005 | 468,940 | 2,356,945 | 1923 .. | 1,969,834 | 445,792 | 2,415,626 |
| 1914 .. | 2,275,614* | 518,070 | 2,793,684* | 1924 .. | 2,083,207 | 674,483 | 2,757,690 |
| 1915 .. | 2,208,624 | 353,471 | 2,562,095 | 1925 .. | 2,114,995 | 572,573 | 2,687,568 |
| 1916 .. | 2,257,135 | 293,956 | 2,551,091 | 1926 .. | 2,239,999 | 483,918 | 2,723,917 |
| 1917 .. | 2,068,419 | 291,597 | 2,360,016 | 1927 .. | 2,366,740 | 378,090 | 2,744,830 |
| 1918 .. | 2,034,250 | 255,332 | 2,289,582 | 1928 .. | 2,436,753 | 247,861 | 2,684,614 |
| 1919 .. | 1,847,848 | 391,434 | 2,239,282 | 1929 .. | 2,535,864 | 215,656 | 2,751,520 |
| 1920 .. | 1,843,705 | 476,343 | 2,320,048 | 1930 .. | 2,542,092 | 157,943 | 2,700,035 |

* Includes 21 tons shale.

The output for 1930, 2,542,092 tons, was the highest recorded for any one year. It showed a small increase of 6,228 tons over the output for 1929.

In the Northern District the output was 3,546 tons less than that of the previous year. During the first half of the year the market was very dull, but during the second half it was helped considerably by the coming into continuous operation of the Auckland Power-station consequent on the breakdown of the hydro-electric power-station at Arapuni. Two new mines came into operation during the year, the Wilton and Macdonald Mines. The productive capacity of the mines in the Waikato is now far ahead of the market requirements. During 1930 much idle time was experienced at the Waikato mines. The indications are that this will be more serious during the present year, while the outlook

for 1932 is bad, since it is expected that Arapuni Power-station will resume operations in June, 1932, with an output of 60,000 kw., and the Auckland Power-station, which now consumes over 3,000 tons of coal per week, will then close down. During 1930 competition between the various mines was very keen, and prices have been forced down to such an extent as to make it doubtful if any of the mines can produce coal and sell it at a profit at the present prices.

The output from the West Coast District decreased by 3,937 tons. In the early part of the year the market was fairly good by reason of the coal strike on the Maitland field in New South Wales, but in the latter part of the year much idle time was experienced. The trade depression has reduced the consumption of coal on the railways, while the extended use of hydro-electricity is reducing the demand for coal for gasworks, household, and industrial purposes. The Buller district is more affected than the Grey district. The Buller district in former years supplied most of the bunker coal used in New Zealand ports; that market has been much reduced through the increasing use of oil fuel on ocean liners. The Grey district has the advantage of through railway connection to Canterbury and has increased its market there at the expense of the Buller district. Both districts are suffering from competition with coal imported from Australia; Newcastle screened coal can at present be landed at New Zealand main ports at prices below which it is possible to land screened bituminous coal from the West Coast.

In the Southern District the output for the year showed an increase of 13,711 tons. In spite of this, much idle time was experienced during the summer months, and at some of the mines the miners are sharing the available work.

Comparatively little time was lost during the year from industrial troubles. The number of co-operative parties working small mines still continues to increase.

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

| Name of Colliery. | Locality. | Class of Coal. | Output for 1930. | Total Output to 31st December, 1930. | Total Number of Persons ordinarily employed. |
|---|---|---|---|---|---|
| | | | Tons. | Tons. | |
| *Northern District.* | | | | | |
| Hikurangi | Hikurangi | Sub-bituminous | 46,773 | 394,762 | 187 |
| Wilson's | ,, | ,, | 58,787 | 546,142 | 188 |
| Rotowaro | Huntly | Brown | 143,163 | 1,503,102 | 273 |
| Pukemiro | ,, | ,, | 127,205 | 1,886,708 | 257 |
| Waipa | ,, | ,, | 33,071 | 1,071,346 | 107 |
| Glen Afton | Glen Afton | ,, | 177,244 | 1,180,373 | 361 |
| Renown | Waikokowai | ,, | 88,790 | 187,880 | 179 |
| *West Coast District.* | | | | | |
| Westport-Stockton | Ngakawau | Bituminous | 152,600 | 2,795,042 | 311 |
| Millerton | Millerton | ,, | 168,185 | 8,071,556 | 450 |
| Denniston | Denniston | ,, | 187,165 | 9,973,114 | 522 |
| Westportmain | Westport | ,, | 29,272 | 157,340 | 43 |
| Cardiff Bridge | Seddonville | ,, | 24,844 | 190,280 | 28 |
| Paparoa | Roa | Semi-bituminous | 28,150 | 652,995 | 36 |
| Blackball | Blackball | Sub-bituminous | 96,076 | 3,897,427 | 301 |
| Liverpool (State) | Rewanui | Bituminous | 132,550 | 2,163,947 | 334 |
| James (State) | Rapahoe | Sub-bituminous | 42,284 | 269,421 | 79 |
| Dobson | Dobson | Bituminous | 117,386 | 445,538 | 311 |
| Wallsend | Brunnerton | ,, | 62,573 | 314,999 | 161 |
| *Southern District.* | | | | | |
| Shag Point | Shag Point | Brown | 21,464 | 284,624 | 60 |
| Kaitangata and Castlehill (3 collieries) | Kaitangata | ,, | 101,672 | 4,792,036 | 249 |
| Linton (2 collieries) | Nightcaps | ,, | 116,910 | 731,549 | 165 |
| Wairaki (2 collieries) | ,, | ,, | 39,489 | 366,415 | 94 |
| Mossbank (2 collieries) | ,, | ,, | 50,613 | 314,495 | 78 |
| 155 other collieries | All coalfields | Various | 495,826 | 7,887,214 | 1,093 |
| Collieries abandoned or suspended, &c. | Various | ,, | .. | 23,762,486 | .. |
| Totals | .. | .. | 2,542,092 | 73,840,791 | 5,867 |

## SECTION II.—PERSONS EMPLOYED.

| Inspection District. | Average Number of Persons employed during 1930. | | |
|---|---|---|---|
| | Above Ground. | Below Ground. | Total. |
| Southern | 232 | 701 | 933 |
| West Coast | 766 | 2,354 | 3,120 |
| Northern | 439 | 1,375 | 1,814 |
| Totals, 1930 | 1,437 | 4,430 | 5,867 |
| Totals, 1929 | 1,370 | 4,127 | 5,497 |

The following statement shows the tons of coal raised, persons employed, lives lost by accidents in or about collieries, &c., to 1930.

| Year. | Output, in Statute Tons. | Persons ordinarily employed. | | | Tons raised per each Person employed below Ground. | Lives lost by Accidents in or about Collieries. | | |
|---|---|---|---|---|---|---|---|---|
| | | Above Ground. | Below Ground. | Total. | | Per Million Tons produced. | Per Thousand Persons employed. | Number of Lives lost. |
| Prior to 1900 | 13,444,437 | * | * | * | * | * | * | 165 |
| 1900 .. | 1,093,990 | 617 | 1,843 | 2,460 | 593 | 3·65 | 1·62 | 4 |
| 1901 .. | 1,239,686 | 688 | 2,066 | 2,754 | 600 | 2·42 | 1·09 | 3 |
| 1902 .. | 1,365,040 | 803 | 2,082 | 2,885 | 655 | 1·46 | 0·69 | 2 |
| 1903 .. | 1,420,229 | 717 | 2,135 | 2,852 | 665 | 2·81 | 1·40 | 4 |
| 1904 .. | 1,537,838 | 763 | 2,525 | 3,288 | 609 | 2·60 | 1·21 | 4 |
| 1905 .. | 1,585,756 | 833 | 2,436 | 3,269 | 651 | 3·78 | 1·83 | 6 |
| 1906 .. | 1,729,536 | 1,174 | 2,518 | 3,692 | 687 | 3·46 | 1·62 | 6 |
| 1907 .. | 1,831,009 | 1,143 | 2,767 | 3,910 | 662 | 6·55 | 3·07 | 12 |
| 1908 .. | 1,860,975 | 992 | 2,902 | 3,894 | 641 | 2·68 | 1·28 | 5 |
| 1909 .. | 1,911,247 | 1,159 | 3,032 | 4,191 | 630 | 3·66 | 1·67 | 7 |
| 1910 .. | 2,197,362 | 1,136 | 3,463 | 4,599 | 634 | 7·28 | 3·48 | 16 |
| 1911 .. | 2,066,073 | 1,365 | 2,925 | 4,290 | 706 | 6·77 | 3·26 | 14 |
| 1912 .. | 2,177,615 | 1,130 | 3,198 | 4,328 | 681 | 4·13 | 2·08 | 9 |
| 1913 .. | 1,888,005 | 1,053 | 3,197 | 4,250 | 590 | 3·18 | 1·41 | 6 |
| 1914 .. | 2,275,614 | 1,176 | 3,558 | 4,734 | 639 | 21·53 | 10·35 | 49† |
| 1915 .. | 2,208,624 | 1,050 | 3,106 | 4,156 | 711 | 4·07 | 2·16 | 9 |
| 1916 .. | 2,257,135 | 988 | 3,000 | 3,988 | 752 | 2·65 | 1·50 | 6 |
| 1917 .. | 2,068,419 | 1,090 | 2,893 | 3,983 | 715 | 1·93 | 1·00 | 4 |
| 1918 .. | 2,034,250 | 1,102 | 2,892 | 3,994 | 703 | 2·95 | 1·50 | 6 |
| 1919 .. | 1,847,848 | 1,095 | 2,849 | 3,944 | 648 | 5·41 | 2·53 | 10 |
| 1920 .. | 1,843,705 | 1,152 | 2,926 | 4,078 | 630 | 0·54 | 0·24 | 1 |
| 1921 .. | 1,809,095 | 1,218 | 3,149 | 4,367 | 574 | 5·52 | 2·28 | 10 |
| 1922 .. | 1,857,819 | 1,191 | 3,365 | 4,556 | 552 | 3·23 | 1·31 | 6 |
| 1923 .. | 1,969,834 | 1,353 | 3,647 | 5,000 | 540 | 2·53 | 1·00 | 5 |
| 1924 .. | 2,083,207 | 1,364 | 3,505 | 4,869 | 594 | 4·80 | 2·05 | 10 |
| 1925 .. | 2,114,995 | 1,288 | 3,489 | 4,777 | 606 | 3·78 | 1·67 | 8 |
| 1926 .. | 2,239,999 | 1,336 | 3,823 | 5,159 | 586 | 6·69 | 2·90 | 15 |
| 1927 .. | 2,366,740 | 1,386 | 3,988 | 5,374 | 593 | 4·23 | 1·86 | 10 |
| 1928 .. | 2,436,753 | 1,366 | 4,010 | 5,376 | 608 | 3·69 | 1·67 | 9 |
| 1929 .. | 2,535,864 | 1,370 | 4,127 | 5,497 | 614 | 4·73 | 2·18 | 12 |
| 1930 .. | 2,542,092 | 1,437 | 4,430 | 5,867 | 574 | 5·50 | 2·38 | 14 |
| Totals .. | 73,840,791 | .. | .. | .. | .. | .. | .. | 447 |

* For returns for previous years see page 32, Mines Statement, 1921. † Year of Ralph's (Huntly) explosion.

## SECTION III.—ACCIDENTS.

The following is a summary of accidents in and about coal-mines during 1930, with their causes :—

| — | Fatal Accidents. | | Serious Non-fatal Accidents. | |
|---|---|---|---|---|
| | Number of Separate Fatal Accidents. | Number of Deaths. | Number of Separate Non-fatal Accidents. | Number of Persons injured, including those injured by Accidents which proved Fatal to their Companions. |
| Explosions of fire-damp or coal-dust .. | .. | .. | .. | .. |
| Falls of ground .. .. .. | 7 | 8 | 13 | 15 |
| Explosives .. .. .. .. | .. | .. | 1 | 1 |
| Haulage .. .. .. .. | 1 | 1 | 3 | 3 |
| Miscellaneous—Underground .. .. | 2 | 3 | 1 | 2 |
| On surface .. .. | 2 | 2 | 2 | 2 |
| Totals .. .. .. .. | 12 | 14 | 20 | 23 |

The fatal accidents for the year under review were at the rate of 2·38 per thousand persons employed and at the rate of 5·5 per million tons of coal produced.

Accounts of the different accidents are given in the reports of the District Inspectors (Annexure A); but two of the fatal accidents, involving the loss of four lives, require special comment.

On the 28th April two miners, Thomas Hart and John Yates, were killed in the Rotowaro Mine when extracting a pillar. Their working-place collapsed without warning over an area of about 500 square feet. The place had been examined by the underviewer and also the deputy half an hour before the accident, and they both considered it was securely timbered and safe. The pillars in the old sections of the Rotowaro Mine are long and narrow, and the roof is of jointed fireclay. The method of extraction was to drive a narrow place off the bord and through the pillar at a distance of 20 ft. or

so from the end of the pillar, and then to work off the stump so formed, erecting props as the roof became exposed. This method naturally resulted in the men having to work well out in the open before the last stump was extracted. Owing to the liability of the seam to spontaneous combustion, it was and is necessary to extract as much of the stump as possible so as to avoid fires. After the fatality Hart and Yates' place was examined and it was found that a fault was running parallel to their bord; the collapse of the roof probably started off this fault. As a result of this accident the system of pillar-extraction at Rotowaro was investigated, and a new method is now practised which will enable the roof to be timbered so that it cannot collapse without warning, and which will do away with the necessity for filling trucks at more than a short distance from the side of a pillar.

At the Waronui Mine a fall had occurred in the return airway quite close to the surface and to the fan. The fan is on a hillside. Instead of clearing the fall, a boxed-in trench was constructed up the hillside on the line of the return airway and an inclined shaft put down from the trench to meet the return airway on the inby side of the fall. On the morning of the 18th September the bottom of this inclined shaft was standing on the laths over the timber of the return airway. On the afternoon of the 18th September the Manager, James Carruthers, and a miner, Joseph Morris, went down the inclined shaft to cut through the laths and connect the shaft with the return airway. The fall in the return airway had caused blackdamp to collect in the return. This blackdamp was released when the close lathing was cut through and quickly filled the inclined shaft, overcoming Carruthers and Morris. Attempts by miners on the spot were made to rescue Carruthers and Morris, but the rescuers were driven back by blackdamp, and a rescue could not be effected till about five hours later, by which time a set of smoke-helmet apparatus had been got from Kaitangata. With the smoke-helmet apparatus both bodies were speedily recovered, but both were dead. Had there been apparatus on the spot when the accident occurred there is little doubt but that both men would have been rescued quickly, and probably both lives would have been saved.

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## SECTION IV.—WORKING OF THE COAL-MINES ACT.

### (*a*) Permitted Explosives.

(Regulations 233 to 237 inclusive.)

The following is a table showing the quantity of permitted explosives used and the number of shots fired at New Zealand coal-mines during 1930:—

| Inspection District | Quantity of Permitted Explosives used (lb.). | | | Number of Shots fired. | Number of Misfired Shots. | | | | Approximate Quantity of Coal produced. |
|---|---|---|---|---|---|---|---|---|---|
| | A2 Monobel. | Ligdynite. | Samsonite. | | By Defective Explosive. | By Defective Detonators. | By Defective Leads. | Total. | |
| | | | | | | | | | Tons. |
| Northern (*i.e.*, North Island) .. | 151,261 | .. | .. | 155,761 | 2 | 73 | 16 | 91 | 549,896 |
| West Coast (of South Island) .. | 191,163 | .. | 186,177 | 438,320 | 22 | 478 | 156 | 656 | 1,279,419 |
| Southern (*i.e.*, Canterbury, Otago, and Southland) | 5,689 | .. | 78,599 | 123,761 | 7 | 18 | 18 | 43 | 294,587 |
| Totals .. .. | 348,113 | .. | 264,776 | 717,842 | 31 | 569 | 190 | 790 | 2,123,902 |

Eighty-three and a half per cent. of the coal produced in the Dominion during 1930 was broken down by permitted explosive, and the average production of coal per pound of explosive used was 3·46 tons, and per shot fired 2·96 tons.

### (*b*) List of Mines required by Law to use Permitted Explosives.

The following is a list of mines as at the 31st December, 1930, required by law to use permitted explosives:—

*Northern Inspection District.*

Pukemiro Collieries, Pukemiro—Throughout South Mine.
Rotowaro Colliery, Rotowaro—Throughout No. 1 and No. 3 Mines.
Glen Afton Colliery, Glen Afton—All sections of the mine, with the exception of A section.
Waikato Extended Colliery, Huntly.—All sections.
Renown Colliery, Rotowaro—All sections.

*West Coast Inspection District.*

Puponga, Puponga.
O'Rourke's, Murchison.
Bennett and party's, Seddonville.
Cardiff Bridge, Seddonville.
Charming Creek, Seddonville.
Cascade, Seddonville.
Westport-Stateville, Seddonville.
Chester's, Seddonville.
Coal Creek, Seddonville.
Glasgow, Seddonville.
Quinn and party's, Seddonville.
Westportmain, Granity.
Westport-Mokihinui, Seddonville.
Westport Coal Co.'s Denniston mines.
Westport Coal Co.'s Millerton mines.
Westport-Stockton, Ngakawau.
Wynn's, Seddonville.
Rocklands, Berlin's.
Whitecliffs, Berlin's.
Archer's, Capleston.
Clele, Merrijigs.
Coghlan's, Capleston.
Collins, Murray Creek.
Terrace, Reefton.
Morrisvale, Reefton (Perfection Valley, Matchless, and Surprise).
Defiance, Reefton.
Burke's Creek, Reefton.
Waitahu Colliery, Reefton.
Lankey's Creek, Crushington.
White Rose, Merrijigs.
Armstrong's, Dunollie.
Baddeley's, Runanga.
Bellvue, Runanga.
Blackball Coal Co.'s, Blackball.
Brae Head, Dunollie.
Cain's, Rapahoe.
Castle Point, Runanga.
Cox's Creek, Runanga.
Dobson, Brunnerton.
Duggan's, Rewanui.
Hunter's, Dunollie.
Briandale, Ten-mile.
Moody Creek, Dunollie.
Old Runanga Co-operative party, Rewanui.
Schultz Creek, Runanga.
Leitch's, Twelve-mile.
Smith's, Runanga.
Spark's, Rewanui.
State Coal-mines (Liverpool Collieries and James Colliery).
Paparoa, Roa.
Wallsend, Brunnerton.
Dennehy's, Barrytown Road.
New Point Elizabeth, Dunollie.
Goldlight, Dunollie.
Fiery Cross, Dunollie.
Jubilee, Rapahoe.
Bellbird, Ten-mile Road.

*Southern Inspection District.*

Kaitangata No. 1 Mine, Kaitangata.
Kaitangata No. 2 Mine, Kaitangata.
Wairaki Mine, Ohai.
Birchwood Mine, Ohai.
Linton Mine, Ohai.
Black Diamond, Ohai.
Black Lion, Ohai.

(*c*) List of Mines required by Law to use Safety-lamps.

The following is a list of the mines as at the 31st December, 1930, required by law to use safety lamps :—

*Northern Inspection District.*

Pukemiro Collieries, Pukemiro—Horne's No. 2 section and west section south colliery.
Rotowaro Colliery, Rotowaro—Throughout No. 1 and No. 3 Mines.
Glen Afton Colliery, Glen Afton—No. 1 heading section.
Renown Colliery, Rotowaro—Main north section.

*West Coast Inspection District.*

Westport Coal Co.'s (one section, Millerton Mine).
Dobson, Brunnerton.
Hunter's, Dunollie.
Spark's, Rewanui.
State Mine (Liverpool No. 2).
Paparoa, Roa.
Wallsend, Brunnerton.

*Southern Inspection District.*

Kaitangata No. 1 Mine, Kaitangata.
Kaitangata No. 2 Mine, Kaitangata.
Wairaki Mine, Ohai.
Birchwood Mine, Ohai.
Linton Mine, Ohai.
Black Diamond, Ohai.
Black Lion, Ohai.

(*d*) Dangerous Occurrences reported.

(Regulation 82.)

A full account of these is given in the reports of the District Inspectors (Annexure A). The most serious was the flooding of the Hikurangi Shaft Colliery on the 29th July. The cover over the seam is limestone, jointed and fissured. Like most seams under such cover, the Hikurangi seam is liable to sudden influxes of water. The Hikurangi seam has the further disadvantage that it lies under a swamp. The normal inflow of water into the mine is about 1,000 gallons per minute, but this is subject to temporary sudden increases. On the 29th July a breakdown of the pumping-plant occurred,

and it is said that at the same time the mine was making more water than usual. Before the breakdown had been repaired and the pumps working normally the water had risen sufficiently to drown part of the plant. The water continued to rise till it reached a point 150 ft. up the shaft, and then leaked through the barrier into Wilson's Colliery. A large electric sinking-pump was installed by November, and the mine was unwatered early in January. This is the third time this mine has been flooded, and on each occasion the loss has been serious. Arrangements are now in hand to improve the efficiency and capacity of the pumping-plant and provide water standage so as to secure the mine against any future flooding.

### (*e*) Electricity at Collieries.

(Regulation 243.)

The following is a summary of the annual returns, in accordance with Regulation 243 (*c*), regarding electrical apparatus at collieries :—

| | |
|---|---|
| Number of collieries at which electrical apparatus is installed | 45 |
| Number of continuous-current installations | 11 |
| Number of alternating-current installations | 35 |
| Number of collieries electrically lighted | 35 |
| Number of collieries using electrical ventilating-machines | 37 |
| Number of collieries using electrical pumping plants | 29 |
| Number of collieries using electrical haulage plants | 33 |
| Number of collieries using electrical screening plants | 14 |
| Number of collieries using electrical miscellaneous plants | 22 |
| Number of collieries using electrical locomotives | 1 |
| Total horse-power employed from motors on surface | 6,191 |
| Total horse-power employed from motors below ground | 3,894½ |

### (*f*) Prosecutions.

Forty-one informations were laid by the District Inspectors during the year for breaches of the Coal-mines Act and Regulations; one information was dismissed, three were withdrawn, and thirty-seven convictions were obtained. Accounts of the individual prosecutions are given in the reports of the District Inspectors (Annexure A).

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## SECTION V.—LEGISLATION AFFECTING COAL-MINES.

There were no amendments to the Coal-mines Act or to the Regulations during the year.

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I desire again to acknowledge the efficient help and co-operation which I have received from the District Inspectors of Coal-mines. The ventilation of mines is always a subject of concern, particularly the ventilation of the gassy mines in the Grey district. It appears to the Inspectors and myself that too much reliance is placed on brattice-cloth, that much more use should be made of air-splitting, and that the use of brattice doors on haulage roads and jigs should be avoided wherever practicable. Brattice has a short life, and requires constant repairs and frequent renewals, with the result that the cost of bratticing is quite a considerable item on most mine-cost sheets. One fact to which sufficient weight is rarely given is that when brattice is erected along a roadway, 2 ft. to 3 ft. from the side of the pillar as is commonly the case, the ventilating-pressure required to drive a given air-current along behind 1 chain length of that brattice is as great as the pressure required to drive the same current of air along 50 to 100 chains of ordinary airway. It has often been stated that there is a limit to the number of splits into which the ventilating current of a mine can be divided with efficiency, and it is usually assumed that the efficient limit is soon reached. A study of the question as regards New Zealand mines proves conclusively that no mine has in any way approached the limit of efficiency as regards splitting. In a few mines the number of splits has recently been increased, and the result has always been better ventilation, better control of the air, and reduced consumption of power at the fan. In our mines the best results as regards cost are got with small sections; if gas in quantity has to be dealt with, or if the seam is liable to spontaneous combustion, there is a very strong case for making each such section a separate split. Where this practice has been followed it has been found that, besides the improvement in the ventilation, the trucking and haulage cost is reduced by reason of the fact that fewer brattice or wooden doors are required and also that the cost of air-crossings is more than balanced by the reduced cost of bratticing.

I have, &c.,
J. A. C. Bayne,
Inspecting Engineer and Chief Inspector of Coal-mines.

# ANNEXURE A.

## SUMMARY OF REPORTS BY INSPECTORS OF MINES.

### NORTHERN INSPECTION DISTRICT (William Barclay, Inspector of Mines).

#### Output of Coal.

The whole of the Northern District produced 766,312 tons of coal during the year 1930. The North Auckland district produced 140,911 tons, an increase of 24,802 tons; the Waikato district 610,160 tons, a decrease of 41,611 tons; and the Taranaki district 15,241 tons, an increase of 13,263 tons. In the Waikato field two new large collieries, McDonald, Waikokowai, leased by the Glen Afton Collieries, Ltd., and Wilton, owned by the Wilton Collieries, Ltd., were opened out and equipped with modern plant to market outputs at the end of the year. Both new fields contain large unbroken areas of brown coal connected to the railway. In order to meet the demands of the house-coal and steam-coal trade, all the Waikato companies have installed up-to-date screening-plants. These plants are very complete, and it is the general practice to make five separate grades of coal at those mines competing for the domestic-coal trade. During the year the miners in several of the long-established Waikato mines suffered much idle time due to reduced outputs, a natural consequence arising from the opening of additional mines in diminishing markets. The Waipa Colliery at Glen Massey ceased operations on the 8th November owing to high cost of production and the reduction in selling-prices resulting from increased competition. In the Northern field the Hikurangi Shaft Colliery was again flooded for five months of the year, causing a dissipation of the company's reserves and loss of work to the miners. The increased output in this district was produced by ten parties of miners working thin coal-seams left by former workings over the field. The erection of the low-temperature carbonization plant at Rotowaro is almost completed, and experimental trials of the carbonization of the waste coal-slack are shortly to be undertaken in order to prove the commercial value of the products from the adopted process.

#### Summary of Operations at each Colliery for the Year ending 1930.

*Hikurangi Coal Co., Ltd. (Shaft Colliery).*—A serious flooding of the mine-workings occurred on the 29th July, due mainly to the inefficiency of the installed pumps and boilers. Since the previous flooding and restoration of the mine-workings early in January of the present year, a daily average output of 300 tons was obtained from the west heading section from places advancing to a proved fault in the coal-seam. On the morning of the flooding one of the steam-boilers was under repair, and the reduced steam-pressure, from 130 lb. to 95 lb., affected the efficiency of the pumps to the extent that the mine-water rose rapidly from the sump-level. The boiler was repaired at 7.30 p.m., and when the normal steam-pressure was restored an additional 9 in. pump, installed as a standby unit, was started up to run in conjunction with the 6 in. and 7 in. pumps permanently installed at the top of McKenzie's dip. From evidence given by the Deputy and the pumpman, it appeared that the emergency 9 in. pump failed to function, due possibly to a defect in the suction. During the early morning the water rose steadily against the pumps, which were eventually submerged, together with the motors and the whole of the mine workings. On the 16th September the water had risen 150 ft. up the shaft; at that height it flowed into the neighbouring colliery (Wilson's) through channels in the roof-cover over the 3 chain barrier between the respective workings. Wilson's Collieries Co. installed two 7 in. pumps in the Hikurangi No. 2 shaft, and held the water at a safety level until the 8th November, when the Hikurangi Co. resumed pumping with a pump obtained through the Mines Department from Muir's Reef Gold-mining Co. This sinking-pump has a rated capacity of 75,000 gallons per hour at a head of 500 ft., and with one 7 in. pump in support it dewatered the mine-workings in nine weeks from the date it was installed in No. 2 shaft. The Hikurangi shafts, No. 1 and No. 2, were sunk on the edge of an extensive swamp area which is in course of drainage. The roof cover over the coal-seam is composed of jointed limestone that contains large feeders of water, which flow into the mine-workings when the faults are pierced by the advanced headings, resulting in increasing quantities of water to be pumped up the shafts. The successive floodings of the mine-workings have seriously affected the company by loss of output and expenses incurred in dewatering the workings. In this connection the Chief Inspector of Mines has submitted proposals for remedial measures to be taken in prevention of a recurrence of similar floodings. The safeguards consist of a deepening of No. 1 shaft and the construction of a lodgment to hold at least eight hours' water.

*Wilson's Collieries, Ltd.*—A normal output was maintained during the year from places in No. 6 section and the main dip advanced workings. In No. 6 section the pillars are being extracted from a seam 5 ft. in thickness. The physical conditions of the mine have not been conducive to easy mining, and abnormally high temperatures of the mine-air have existed in the low seam rise places, causing discomfort to the workmen and loss of output to the company. In the dip section the seam is of a tough nature and has no regular partings. The limestone roof cover exceeds 400 ft., and large coal-pillars are formed in the first working in prevention of crushing. The roofs in the working-places do not stand very well, and every place is timbered with sets and laths systematically set right up to the working-faces. A 9 in. borehole 430 ft. from the surface to the pump-station in the main dip, drilled for the passage of 8 in. water-pipes, was completed during the year, and almost all of the mine-water is now being discharged through the vertical column of pipes. Formerly the water was pumped in two stages a distance of 55 chains inclined to the surface, and many difficulties have been experienced in maintaining the former pump column, which was affected badly by incrustation. An uncommon feature in the dip workings is the presence of numerous soda-water springs in the shape of small geysers accompanied by large volumes of carbon-dioxide gas. The roadways are naturally wet throughout the mine-workings, and no accumulations of dry coal-dust could be seen in any of the working sections. From the 30th August to the 8th November the company expended the sum of £1,964 in pumping the Hikurangi Shaft water, and also erected 60 chains of electric-power transmission-line from the colliery to Hikurangi Shafts to assist in dewatering the shaft mine-workings.

*Silverdale Colliery* (Foot's Crown Lease).—Operations were carried on continuously during the year. The seam is 3 ft. in thickness, and the daily output per man does not average 2 tons. A considerable area is standing on pillars, which are to be extracted when the headings reach the boundary.

*Northern Co-operative Colliery* (Cunningham and Party's Crown Lease).—On this lease several drives have been driven in an attempt to open out the bottom seam for working-places. The bottom seam is 4 ft. thick, and has been followed as far as the installed siphon was effective in draining the workings. On Coal Lease 70, owned by A. E. Cunningham, 356 tons of coal were extracted by Parsons and party under arrangements with the lessee. During a visit to the scene of operations I observed that the roadway through broken ground was sinking, and spreading weight on the timber. I advised the miners to cease work and draw their rails from the disturbed ground.

*Glen Nell Colliery* (Crown Lease, Sublease from McIntyre and Party).—Operations on this lease were conducted by Foot and party in a coal-seam 3 ft. thick. Proper attention is paid to the timbering of a soft watered roof. A coal hopper to hold 30 tons of coal has been erected in order to facilitate the loading of motor-lorries.

*Christies Colliery.*—A party of eight miners was engaged during the year in extracting the pillars from the above freehold mine. The mine section on the flat under the creek was abandoned early in the year. The rise section on the hillside was rapidly depillared and all plant withdrawn at the end of the year. The total output from the mine was 48,657 tons.

*Phœnix Colliery* (McKinlay's Crown Lease).—The pillars were extracted from the rise workings, and the 3 ft. seam was followed to the dip in order to provide another working-section. The roof is remarkably hard, requiring little timber in support. The seam is almost level, but has local rolls. The cover varies from outcrop to 60 ft. An output of 3,407 tons was produced during the year.

*Ruatangata Colliery, Kamo.*—The main headings have been continued through the old standing pillars of the Kamo Mine workings. An old shaft to the surface was intersected, repaired, and reconnected to the mine-workings for ventilating purposes and as a third means of escape for the workmen. Twenty tons of coal per day have been produced during the year by ten men employed underground.

*Tauranga Block, Muir's Coal Mine* (Sublease, Wilson's Collieries, Ltd.).—Operations have been carried on in a new piece of coal-bearing land situated along the Marua Road boundary. The seam is 4 ft. in thickness, and contains numerous intermittent streaks of stony coal. It was evidently left as unworkable by previous prospectors on the area.

*Tauranga Block* (J. Cunningham and Party).—A party of five miners was engaged in extracting several pillars of shallow coal during the stoppage of mining operations at the Hikurangi Shaft Colliery. An output of 715 tons was returned for two months' work.

*Tauranga Block* (G. Windress and Party).—Several isolated pillars were recovered from a thin coal area along the northern boundary of the block. The workings were safely maintained.

*Hikurangi Coal Co. Freehold Block* (Sublease, Coutt's Colliery).—A party of four miners successfully obtained 2,000 tons as a result of prospecting and mining out thin coal-blocks left by a former working. The workings were maintained in good order, and adequate supplies of timber were kept at the mine for use in timbering the soft roof.

*Hikurangi Coal Co. Freehold Block* (Sublease, May Mine, owned by Newby and Party).—The worked coal-seam averaged 2 ft. in thickness, and a portion of the floor had to be lifted to afford height for the skips. The places were well timbered, and the faces were maintained in a safe condition. Eight miners were employed, for the production of an output which barely returned minimum wages.

*Hikurangi Coal Co. Freehold Block* (Sublease, Laird's Mine, Waro).—Subsequent to the testing of the area by boreholes drilled over ground likely to contain unworked patches of coal, the party opened a water-free drive to reach a 4 ft. seam of coal. An output of 461 tons was produced in three months under safe roof-conditions.

*Hikurangi Coal Co. Freehold Block* (Sublease, Craig's Coal-mine).—A party of three miners opened out a small area of thin coal near the northern boundary of the lease. The timber was badly set, and insufficient batter was provided in the cuttings leading to the new entrance. The future prospects are not favourable for getting coal under profitable conditions.

*Hikurangi Coal Co. Freehold Block, Cook's Coal Mine.*—A small output was obtained from an area along the fringe of an outcrop of inferior coal. A road for access by motor-lorry was formed to connect the mine to the main county road at Waro.

*Hikurangi Coal Co. Freehold Block, Jubilee No. 3 Coal-mine* (owned by Wilson and Party).—The mine is situated within 1 chain of the Main North Road. A dip drive is proceeding in clean coal 4 ft. in thickness.

*Hikurangi Coal Co. Freehold Block, Fearnley's Coal-mine.*—Operations during the year were confined to the bottom seam of the old Rocks Coal-mine. The top seam was previously worked out by Kerr and party. The seam is 6 ft. in thickness, and the workings have exposed a considerable area of easily-mined coal, available for extraction under safe conditions. Six miners are employed. The output is conveyed to the Hikurangi Shaft Colliery for power purposes in dewatering the Shaft Colliery.

*Jackson's Rocks Colliery* (McLeod's Freehold).—A small output was obtained from a dip drive set off to win a barrier of shallow solid coal lying against a fault. The drive was badly timbered, and one of the miners was seriously injured due to the collapse of the timber supporting the dip roof.

*Dunn and Steers Coal-mine* (Crown Lease, Scenic Reserve).—Operations by the party are being conducted near the main North Road boundary of the scenic reserve. A limited area of unbroken ground as evidenced by surface subsidences is available for mining. The seam is 10 ft. in thickness, and the party should obtain at least 2,000 tons from this prospected area.

*McIness's Coal-mine* (Crown Lease, Marua Road).—Development work to connect a mine to the main Marua Road has been carried on during the year. A surface tramway was laid down, and two separate mine sections have been opened out to win shallow areas of proved soft coal.

*Cherrie and Party's Coal-mine* (Crown Lease).—The party was engaged in driving through several falls in an attempt to reach an area of coal unaffected by operations on the field conducted by the Northern Coal Co. twenty years ago. The drive is properly timbered with sets suitably joggled and lathed to carry the weight of the broken ground.

*New Kirikapa Coal-mine* (Webber and Party).—A small output was obtained during the summer months from an area of rise ground on the Ngungaru Hill. The seam is 4 ft. thick, and the coal is of good quality. The output was carted to Whangarei, a distance of ten miles by road.

*Glenbervie Colliery* (owned by J. Doel).—The coal-seam has been followed for a distance of 8 chains along the foot of the hills on Douglas's estate. The seam has an average height of 6 ft. The coal is clean, and of good quality. The seam lies fairly level, and the roof cover is increasing under the hill. The owner of the mine is contemplating the construction of 80 chains of a motor road, in place of the tramway, which carries a way-leave royalty of 1s. per ton.

*Harrison's Waro Colliery.*—This colliery worked intermittently during the year due to lack of demand. The working-seam averages 7 ft. in height in the northern section, where six bords have been opened out through the fault. The shaft and roadways are properly equipped, and could deal with an output of 150 tons per day.

*Avoca Coal-mine.*—This colliery is situated on rise ground at Avoca, six miles from Tangowahine. A party of eight Hikurangi miners opened out the seam and followed the coal-floor for a distance of 90 ft. on level course. The headings in all directions struck soft coal with a high water content, which causes it to disintegrate freely. Mining operations were discontinued on the 31st March, and the plant was subsequently removed from the mine.

*Whareora Coal-mine.*—At the end of the year W. H. Higgins secured a lease of 100 acres of proved coal land from the Whareora Coal Co., situated on Section 71, Parish of Parahaki, eight miles from Whangarei. A considerable amount of boring and prospecting had been done on the property by the Whareora Coal Co. twenty years ago. The present lessee has opened out a 6 ft. seam which contains an intervening band of shale 1 ft. thick occurring in the centre. Prospects of discovering cleaner coal ahead are promising.

*Waikato District.*

*Rotowaro Collieries* (Taupiri Coal-mines, Ltd., Owners).—Coal has been produced from three mine sections—namely, No. 1, No. 2, and No. 3 sections. The total output was 143,163 tons. In No. 1 Mine section the developing headings have been advanced to reach a thick seam area to the south of the main haulage road, and operations are proceeding apace to extend the main endless haulage road to within easy distance of the advanced sections. The seam has an average height of 18 ft. with few regular partings. The roof-cover, of jointy fireclay, averages 100 ft. over the mined area. Electric safety-lamps are used throughout the mine section, and stone-dust is applied in treatment of the dry coal-dust. In No. 2 Mine section an output of 100 tons per day is being obtained from bords in the top seam under ideal working-conditions as regards safety and cost of production. No. 3 Mine section has been equipped with an endless rope haulage road to deal with an increasing output from the machine-mined sections. The seam is 20 ft. thick, In certain sections of the workings the

roofs have been difficult to support, due to the splintering of the top coal after the roofs have been formed. The affected roofs require heavy sets of timber and packing to fill the cavities, which afford spaces for the accumulation of firedamp. Electric safety-lamps of an approved type are in use in this mine section, where the presence of firedamp has been frequently reported by the examining deputies. A high standard of ventilation is maintained by a sirocco fan producing 70,000 cubic feet of air per minute. Two coal-cutting machines are in use in the bord sections. Each bord cut produces 20 tons, and eight bords are usually cut per eight-hour shift. An accident causing a double fatality occurred in No. 4 pillar section, No. 1 Mine, due to the premature collapse of a roof whilst the miners were engaged in removing the inside remaining stump of a pillar. From evidence adduced at the inquest it would appear that the working-place had been adequately timbered with a double row of props on one side of the roadway, and a single row on the goaf side of the place. It was an ordinary working-pillar place, and had been examined and reported safe by the underviewer and shot-firer shortly before the accident. No convincing explanation of the cause of the fall was advanced by the officials of the mine or the workmen in adjoining places. Accepting the view that the accident could have been caused by too large an area being under support by props, so that the weight became too heavy for them, I subsequently impressed upon the management the importance of reducing the roof area under timbers by turning away the splits through the pillars at points as close as possible to the pillar ends. The management also agreed to reduce the height of the first working from 14 ft. to 10 ft., thus increasing the strength of the formed pillars.

*Pukemiro Collieries* (Pukemiro Collieries, Ltd., Owners).—The mining system followed from the inception of operations has not been changed to any great extent, with the exception that pillars 60 ft. to 70 ft. square are formed and provided for depths over 400 ft. Two separate mine sections produced 127,205 tons. In the North Mine section the seam has an average height of 12 ft. The cover varies from 50 ft. to 100 ft., from under which the pillars are being successfully removed from the boundaries and panels to the main haulage road. In some parts near the outcrop in Shank's Spur section a fire following the collapse of the roof involved a number of partially worked places. Measures taken to erect brick stoppings ahead of requirements with doorways open for haulage and ventilation were always in readiness for quick sealing, and were effective in arresting the progress of the fire. In the South Mine section the seam has been followed westward from the outcrop to attain a roof cover of 500 ft. under Hangipipi Trig. Station. In the advanced headings under this roof-cover the coal is of soft structure, fracturing easily under roof-weight conditions. During the year the roadways in the west section were under repair for a considerable time due to a crushing movement of the roof, which caused a creeping of the floors in the main haulage-road and return airway. Owing to the friability of the coal and to the fact that it was liable to heat under conditions consequent to the movement, the management decided to withdraw the plant from the affected part and reinstall it along headings 5 chains to the rise of the crushed area in order to reconnect Horne's No. 2 section to the mine haulage-system. The roadways and workings were adequately stone-dusted during the year.

*Glen Afton No. 1 Colliery* (Glen Afton Collieries, Ltd., Owners).—During the year the production of coal from the mine reached 177,244 tons, got from bords and headings in the first mining of the seam. The working seam has an average height of 12 ft. of hard compact coal overlain by a soft fireclay roof, which is rarely exposed, as the places are only worked to a height of 9 ft. The seam is moderately inclined, with local undulations which are troublesome in maintaining even gradients. The roof-cover in the advanced K section is now fully 600 ft., but is only 400 ft. on an average over the area so far mined. Bords are driven 9 ft. high by 14 ft. in width with formed pillars 70 ft. square in all the new workings since 1925. These conditions are conducive to the extraction of the remaining pillars later on. Towards the end of the year 60 per cent. of the available working-places were double-shifted for a daily output of 1,000 tons. In order to effectively seal off several leaking stoppings in the return airway near D section, a continuous wall of concrete, 4 chains in length, was erected to face the pillars between the stoppings.

*Glen Afton No. 2 Colliery* (McDonald State Coal-mine Reserve under lease to the Company).—A new colliery is being vigorously developed to produce an output at the end of the year. From Glen Afton Colliery screens, 160 chains of formation work for an endless-rope roadway was completed to connect three separate mine sections in course of development. The area has been systematically bored, and proved to contain at least 4,000,000 tons of workable brown coal of an average thickness of 14 ft. It is proposed to equip the mines and roadways with modern machinery to produce a daily output of 600 tons. The future prospects of this field are promising, and this may yet prove to be the most productive colliery in the district.

*Graham's Colliery* (Party of Miners, Owners).—An output of 60 tons per day has been maintained from the above colliery, which is situated on rise ground half a mile from Glen Afton Railway-station. The pillars have been successfully extracted from the outcrop boundary. The bords are 6 ft. wide. Pillars, 30 ft. square, under a roof-cover of 40 ft., have been found sufficient to prevent the roof-weight carrying over into adjoining pillars. The seam to be worked in the future averages 4 ft. of coal from floor to soft roof.

*Pukemiro Junction Colliery* (Crown Lease).—The remaining coal in this mine is soft and inferior in quality, and some difficulty is experienced in marketing the output. The impurities occur near the floor, and narrow high places capably timbered with long props are excavated upwards to reach the top portion of clean coal. The daily average output is 50 tons.

*Waipa Colliery* (Waipa Railway Collieries, Ltd., Owners).—This colliery ceased mining operations on the 8th November after reaching the 1,000,000-ton mark of output for a life of seventeen years. The daily output during the last months of operation had fallen from 300 tons to 160 tons in consequence of competition for trade among the established Waikato coal companies. In addition to operating upon a reduced output, many other mining difficulties were encountered in recovering pillar coal from weight-affected sections. The company's railway from Ngaruawahia to Glen Massey, a distance of seven miles, together with bath-house, surface machinery, and skips, were subsequently purchased by the neighbouring Wilton Coal Co., Ltd.

*Waikato Extended Colliery* (Roose Shipping Co., Ltd., Owners).—Operations at this river-side colliery were confined to the mining of a solid area of coal lying to the south of the Waikato old mine-workings. Ten brick stoppings were erected to effectively seal off the pillared workings, where a fire had been troublesome during the early months of the year. The output was transported by river steamers to Mercer and Waikato Heads.

*Huntly Brickworks.*—A daily output of 50 tons of fireclay was produced from an opencast face for use in manufacturing bricks at Huntly. The quarry and endless-rope tramway were maintained in good order.

*Taupiri East Coal-mine* (Auckland University Council Endowment Lease).—This small coal-mine, situated near the southern shore of the Kimihia Lake, produced coal from the pillars of the dip drive. Boreholes drilled on the adjacent hill proved the existence of an isolated area of thick coal. Preparations are being made to drive into this seam and connect it to the road formed by the mine-owner.

*Campbell Colliery* (Whatawhata Crown Lease).—A daily output of 20 tons had been won from this coalfield, situated ten miles from Hamilton and accessible by a good motor-road. The seam has an average height of 8 ft. of clean bright coal. A band of fairly hard shale on top of the seam forms a good roof. The seam slightly dips to the Raglan Road, and preparations are being made to install machinery for drainage and haulage. The output is conveyed to Hamilton by motor-lorries.

*Renown Colliery* (Renown Collieries Ltd., Owners).—During the year the bottom seam was exclusively worked, for an output of 88,790 tons. Much idle time was suffered by the miners during the summer months due to lack of orders. The seam varies in height from 10 ft. to 17 ft., but only 9 ft. is worked in the bords of the first working. Three separate ventilating districts are provided with approved coal-barriers, stoppings, and air-crossings. An interesting feature of spontaneous combustion in the first solid coal-pillar between the intake and return air-ways was manifested by the appearance of fire in the breaks of the pillar. There were

several sooty backs in the pillar, which had been in a wet condition until the present summer. From an investigation of the occurrence it would appear that the drainage of moisture from the backs had caused a measurable shrinkage of the fine coal sufficient to afford, under ventilating-pressure, avenues for the passage of air through the pillar, thus contributing to a set of circumstances for a fast rate of absorption of oxygen in the fine dry coal. The fire was suppressed by the filling-out of the heated coal. Two coal-cutting machines were employed during the year, for the production of 85 per cent. of the total output from the mine. In the early operating stages the machines were useful in advancing the heading faces at double the rate of ordinary hand-mining. That point has now been passed, and it can be reasonably stated that the performances of the machines in the bord places during the past year have firmly established the practicability of their use in all working-places of the mine. In this colliery two bord sections produce 550 tons daily from two machines. This fast rate of driving affords facilities for intensive mining which results in reduced costs for haulage and general maintenance as compared with the slow method of driving by hand. The small coal on the floors of the working-places is cleaned up before the rails are uplifted in disused places, thus reducing the risk of an ignition of the coal-dust. The mine is admirably developed to produce an increased output.

*Wilton Collieries* (Wilton Collieries Ltd., Owners).—This colliery reached the productive stage at the end of the year, when a commencing daily output of 300 tons was produced from headings turned off the main haulage-road to the east, south, and west respectively. The following construction work was completed during the year: 80 chains of railway and siding formation; screen-site formation to take screens and buildings; the formation and equipment of 50 chains of endless-rope roadway at a maximum gradient of 1 in 3. The seam was explored by ten boreholes drilled over an area of 30 square chains. The average depth of the holes was 130 ft., and the average thickness of the proved coal-seam was 7 ft. 6 in. A 4 in. band of stone on top of the coal-seem falls down readily with the coal. Immediately above the band the roof is difficult to hold, and much timber will be required to support the roof, especially if the places are driven more than 12 ft. in width. A Mavor and Coulson coal-cutting machine has been introduced for cutting the developing headings.

*Old Stockman Coal-mine, Mokau.*—A small output was produced by two miners from a 4 ft. seam, for supplying the requirements of settlers on the banks of the Mokau River.

*Paparata Coal-mine, Tangarakau* (Crown Lease; Taranaki Coal-mining Co., Ltd., Owners).—A small output was obtained during the summer months from a 3 ft. seam which has been displaced by a fault. A prospecting-drive on Section 9, Block III, following the coal from the Tangarakau Stream, was driven a distance of 90 ft. in a seam 3 ft. 3 in. of clean hard coal. Operations were suspended pending the policy of the company in respect to means of access and transportation of output to the Stratford–Ohura Railway now in course of construction.

*Egmont Colliery, Tangarakau* (Crown Lease; Egmont Collieries, Ltd., Owners).—The working-seam is 5 ft. in thickness, including 1 ft. of shale band occurring 1 ft. from the floor, which leaves only 3 ft. of marketable coal available for extraction. The shale band is usually uplifted for height along the roadways. The roof-cover of compact sandstone varies from outcrop to 700 ft. The main headings to the east have been advanced 20 chains under a roof-cover of 400 ft. The headings to the south encountered a down-throw fault of unknown displacement of the seam. Bords are driven 14 ft. wide, and 70 ft. square pillars are formed in support of the roadways. The working-faces are machine-holed in the shale band by a Mavor and Coulson "Arc Wall" coal-cutting machine. The daily output per miner from the machine places is 7·5 tons, as compared with 2·7 tons by hand. The output is 80 tons per day for 47 men employed in and about the mine.

*Gilberd's Colliery* (Crown Lease, Tatu).—The area is situated 7 miles from Ohura, near Tatu Village. An outcrop of 5 ft. of clean coal with a tender roof is being followed into the hillside. Access is being obtained by the formation of half a mile of road.

*Rangitoto Colliery* (Tahia, near Te Kuiti).—Mining operations have been conducted on the Native lease for the return of a small output. The seam is 6 ft. in thickness, and the quality of the coal is improving with the advance of the mine-heading into the hillside. The output is carted to Te Kuiti, a distance of ten miles. The local body controlling the road imposes a royalty road tax of 4s. 6d. per ton on all coal conveyed over the road.

### Fatal Accidents.

On 13th February Albert Nightingale was fatally injured at the Avoca Colliery near Tangowahine as a result of a blow on the right side of the neck from a winch-brake lever when he was engaged in operating the winch on the top of the surface incline. The deceased was a member of a party of co-operative miners owning the Avoca Colliery, and at the time of the accident the workmen were not covered by an insurance policy under the Workers' Compensation Act.

On 28th April Thomas Hart and John W. Yates, miners, were fatally injured in No. 1 Rotowaro Colliery due to the premature collapse of the roof whilst they were engaged in extracting the remaining stump of pillar coal in their working-place.

### Serious Non-fatal Accidents.

On 29th March James Stirling was accidentally injured by being struck on the head with a 40 lb. iron bracket which dropped 15 ft. from the screen building whilst he was working below preparing foundations.

On 10th April, at Holland's Mine, J. Green received a serious injury to his elbow by falling when carrying timber.

On 9th July J. A. Wood was jammed between a jig prop and a rake of three skips and sustained fractures of two ribs while working at Renown Colliery.

On 7th August John McKernon, engaged at Wilson's Collieries, sustained serious bruises and a badly cut head, the result of being injured by a slab of roof stone which fell whilst he was preparing timber to support the roof.

On 24th September, at Pukemiro Colliery, a fall of coal partially buried two miners and slightly injured them. A trucker, George Holmes, was also caught by the fall, and sustained a fracture of his right leg.

On 26th September, while working at Glen Afton Mine, Stephen James was jammed between a skip and a prop and sustained a fractured ankle.

### Prosecutions.

On 27th June a miner engaged at Graham's Coal Co., Glen Afton, was prosecuted for using threatening language towards another miner. He was fined £1, costs 10s., by the Stipendiary Magistrate at the Huntly Court.

On 26th September an engine-driver in Glen Afton Colliery was convicted and fined £3, costs 12s., for taking intoxicating liquor into the mine, contrary to the regulations.

### Dangerous Occurrences (Regulation 82).

On 26th April a fire was reported on the east section of Pukemiro Colliery. The affected part was sealed off, and mining operations were resumed in the section three months later.

On 29th July the Hikurangi Shaft Colliery was again flooded, due to the inefficiency of the installed pumps and boilers. The workings were almost unwatered at the end of the year.

*Rotowaro.*—On 22nd October "fire stink" was reported in Mills' dip. Stoppings previously prepared were closed to seal off the area. On 19th November a fire was reported in the electric-cable-junction box, No. 3 Mine, due to the fusing of cables in flexible conduit.

On 10th November indications of heating were discovered in the south straight pillar-workings at Pukemiro Colliery. Stoppings were erected against the goaf.

On 10th December a heating of the coal in a solid coal-pillar near the entrance to the mine was discovered in Renown Colliery. The heated coal was filled out and the pillar cooled down by ventilation.

### Huntly School of Mines.

The average number of students for the year attending night classes held at Glen Massey, Pukemiro, Glen Afton, Waikokowai, and Huntly respectively was fifty-eight. The facilities for teaching the branch schools have been found inefficient for coaching students for Mine Managers' Examinations. An effort is being made for the ensuing year to establish a properly equipped central school at Huntly with the view, now that train arrangements are suitable, of satisfying a number of students who desire to secure a more technical knowledge of mining subjects.

## WEST COAST INSPECTION DISTRICT (C. J. Strongman and Job Hughes, Inspectors of Mines).

During the year the coal-output for the combined Nelson, Buller, Reefton, and Grey districts was 1,286,071 tons, a decrease of 3,937 tons compared with returns of the previous year. In the Nelson district the output fell by 1,818 tons, due to the closing of the North Cape Mine. The output for the Buller district showed a decline of 40,852 tons, whilst the Reefton and Grey districts showed increases of 5,997 and 32,736 tons respectively. The number of men employed on the surface and underground during the year was 3,120, an increase of eighty-eight over the previous year. Towards the end of the year a general slackness of trade was experienced over the whole district. This accounts for the decrease in the yearly production.

*Methods of Working.*—The general tendency is now towards the adoption of the panel system with larger pillars and winning-places 10 ft. to 14 ft. in width and 9 ft. in height. In the Westport district, more especially in the older mines, the problem of roof-control and pillar-extraction is now being given careful consideration. Pillars are being uniformly extracted in a straight line, which is made as long as practicable. Experiments in the use of heavier props (8 in. to 10 in. in diameter) have proved them to be of primary importance to the safety of the men, the control of the roof, and the more complete extraction of the coal; pillars are now being recovered that have previously been abandoned as unworkable. Under the new system the cost of upkeep of the roadways has been considerably reduced, due to the absence of crush on the adjoining pillars.

### Buller District.

*Denniston Colliery: Coalbrookdale Mine.*—Development: Very little development work was done during the year. Two headings in McIllwain's section were advanced a further distance of 4 chains in a north-westerly direction and four panels are now ready for development when required. The main headings in Waterloo section were driven a distance of 9 chains and parallel to McIllwain's headings. The coal in the headings is still somewhat thin, with a friable shaly roof. In old Waterloo section the development of a new panel has been commenced, the headings having been driven 4 chains in a south-westerly direction. This area was assumed to be adjacent to a large fault, but apparently this has run out to small dimensions, and present indications are that a reasonable amount of good-quality coal exists here. In Openshaw's section a dip is being driven in a south-westerly direction, and at present is in 8 ft. of good-quality coal. Solid workings: One panel has been completed in Waterloo section, and a few men only are employed in McIllwain's section. The operation of forming panels in the stone-drive section of Whareatea Extended has been continued in excellent coal. Pillar workings: This phase of mining has been continued in McIllwain's, Openshaw's, and Whareatea Extended sections respectively. The coal in the first-named section is at least 20 ft. thick, with a friable roof. Three pairs of miners only are employed in Cascade Nos. 8 and 9, these being engaged in pillar-extraction. Extensions to the haulage systems were added in the Waterloo and Extended sections.

*Ironbridge and Deep Creek Mines.*—Development: In Deep Creek section a dip stone-drive was put down a distance of 4 chains from Kiel's flat to tap the bottom seam, which varies from 5 ft. to 16 ft. in thickness and which is of good quality. Garing's dip section: The headings in this section are being driven in the bottom seam under Port Arthur section. A small downthrow fault was encountered, and progress retarded. The coal was proved beyond the fault, and preparations are being made to tap same. The driving of main headings, preparatory to forming the panels, is being continued, and panels are also being formed in Young's drive section. Arrangements are now being made to extract the pillars from Young's drive underlying the Kiwi section. Pillar workings: The Bluff section was restarted during the year and pillar-extraction commenced. The coal is hard and thin, but thickens towards the main rope-road. Shaft section: Strata vibration brought on by the earthquake assisted in providing access for surface-water percolation, and the threatened creep caused some anxiety at Gentle Annie steep until same was eventually retimbered. A new auto-synchronous motor was installed at Coalbrookdale fan, and a chain drive replaced the rope drive. The whole of the mining plant is now electrically operated, and the majority of underground plant enclosed by masonry walls. Stone-dusting is carried out efficiently throughout the colliery. During the latter half of the year several boreholes were put down by means of the Government's diamond drill on the new prospecting lease. The results have been encouraging, and the work is still proceeding.

*Millerton Colliery.*—During the year the major portion of the output was won from pillar-extraction. A considerable amount of idle time has been experienced owing to slackness of trade. North-east section: Operations consist of pillar-extraction and the winning of a small area of bottom coal 7 ft. thick, left behind in the first working. The second working in the bottom coal has proved more successful than was at first anticipated. Encouraged by the results obtained, it is proposed to extend the method to other portions of the mine where the coal is too thick to be extracted in one operation. Mangatina section: The reopening of this old pillar section has now been successfully accomplished, an alteration in the method of pillar-extraction having caused the roof to break more evenly, thus taking the excessive weight off the remaining pillars. Generally speaking, the alteration has tended to more economical and safer working. In the sixth west and second Mangatina sections the work of pillar-extraction adjacent to the barren area continues. In the fourth west section the development of the top seam to the south of the Mangatina fault has been continued. The coal is 6 ft. in thickness, but thins to the south and west. The solid work in the bottom seam having been completed, pillar-extraction will shortly commence. Concrete stoppings are being erected to form panels, so that any heating that may occur can be localized. In the third west dip section the work of pillar-extraction has been continued through the year. The coal in this section is probably 35 ft. thick, and a considerable wastage takes place when the tops are dropped. It is now proposed to work the pillars in two lifts, and, with this object in view, headings 6 ft. wide and 8 ft. high are being driven next to the roof. The old fire in the adjacent workings continues to be troublesome, and has several times broken through the stoppings. Fresh stoppings were erected, and the fire controlled. In the middle section the artificial panel having been completed, pillar-extraction, combined with surface-stripping, is in progress. The work of extraction is difficult owing to the excessive height and width of the first workings, and it is probable that heating will occur. In the second west section operations are confined to working the upper portion of the seam to facilitate the filling of the roadway adjacent to the fire with incombustible material to act as a barrier against the fire in Evan's section. In No. 2 dip section extraction of pillars, with a view to breaking the roof and forming a barrier between the dip workings and the fire in Evan's section, has been successfully continued to a point where the coal outcrops in the creek-bed, the fire having worked downhill. With a view to preventing it spreading, the creek-bed was stripped and the coal removed in two operations. The cavity thus made has been filled in with the debris from the strippings. In No. 3 extended section to the dip the seam thinned to an unworkable thickness, and pillar-extraction has been commenced. The conditions around the fire areas are somewhat similar to last year. A staff of workmen are kept busily engaged filling in surface breaks and building concrete stoppings underground.

*Stockton Colliery.*—During the year the main levels in the new east area were extended a distance of 7 chains, 1 chain beyond the south branch of the Ngakawau River, in coal of good quality. The area is very wet, and the roof friable, necessitating narrow bords and carefully timbering. Four boreholes were put down in this area beyond the line of the south fault, proving an extensive area of hard coal of an average thickness of 16 ft. under shallow cover. A new 50 h.p. main and tail electric hauler has been installed to deal with a larger output from the district. In the south-east dip area the main levels have been extended a distance of 6 chains in good-quality coal, allowing the

drives to penetrate around and beyond the faulty ground surrounding the rise workings in the old east area. In the old east and old west areas pillar-extraction is being carried out. The line of extraction varies from 4 chains to 8 chains in length. The management claims that the new system is safer and more economical than the one previously in operation. The work of forming artificial panels by means of concrete stoppings in the old west pillar area has made good progress during the year. The new 775 kv.a. turbo alternator was put into operation towards the end of the year, and has greatly assisted in the development of the mine, providing additional power for pumping and haulage purposes. A considerable amount of repair work has been done during the year, including the relaying of two miles of locomotive track with 60 lb. rails.

*Westportmain Colliery.*—During the year the output has been obtained from pillar-extraction. The section to the east across the creek proved faulted, and the coal stony and unprofitable to work. The section was therefore closed down.

*Cardiff Bridge Mine.*—All development work in this mine has now been completed, the output being maintained from pillar-extraction. The extraction of pillars has allowed the roof to break to the surface, and during wet weather the influx of surface-water is considerable. The sluicing of the coal from the working-faces to the bin is still being successfully practised, the cost of transporting the coal from the face by water-power being considerably less than that in the adjoining section of the mine where ordinary methods are being used.

*Coal Creek Mine, Upper Mokihinui.*—The coal-seam continues to open out in a satisfactory manner. Three main headings, driven on a bearing of 42°, are proving a large area of soft coal suitable for steaming purposes. These headings have now penetrated behind and beyond the fire area in the old mine.

*Chester and Party's Mine.*—The main heading going west has been stopped in thin coal. From the surface a heading is now being driven in a southerly direction towards the old St. Helen's Mine. The seam is 3 ft. thick. Four men have been employed throughout the year.

*Quinn and Party's Mine.*—The damage caused to the haulage-roads by the earthquake in June, 1929, has been repaired, and coal-production resumed. The coal is friable, and the cost of crossing old fallen drives has been considerable. As a result of the high cost of production and the low commercial value of the coal produced, it was decided towards the end of the year to commence pillar-extraction.

*Westport-Stateville Mine.*—Work has been carried on intermittently during the year. The seam has split, and prospecting operations are now being carried on towards the old State Mine.

*Glasgow Co-operative Party's Mine.*—The cost of repairing the earthquake damage of June, 1929, seriously affected the working of this small mine. The dip going south-west penetrated the old State Mine workings, and the work of extracting the pillars was commenced. A slackness of trade towards the end of the year caused the closing-down of the mine.

*Westport-Mokihinui Mine.*—Towards the end of the year this mine was reopened. Two places were started near the outcrop and driven towards the fault. Prospecting operations on the fault-line are being continued.

*Charming Creek Colliery.*—The bulk of the output obtained during the year was won from the top section. Considerable difficulty was experienced during development of this section owing to the prevalence of small faults, rolls, and consequent thinning of the seam. During the early part of the year a series of twelve additional boreholes were completed, which resulted in the proving of a fairly extensive field of coal from 12 ft. to 20 ft. in thickness. The main stone drive was extended a further distance of 700 ft., and in October intersected the coal in the proven area. Work was abandoned in the top section towards the end of the year, when development of the main seam was commenced. A screening-plant was installed, and storage-bins with a capacity of 500 tons erected. Considerable trouble is being experienced with the internal-combustion tractors, and present indications are that it may be advisable to consider some other means of transport power to effectively deal with the desired output. Ventilation at this mine became unsatisfactory towards the end of the year. However, a small sirocco fan was installed in readiness for the resumption of work in 1931. Mine trucks of approximately 2 tons capacity are being used direct to the working-faces. The quality of the coal in the new area is good, and the mine should be in a position to produce a profitable output in the near future.

*Westport-Cascade Mine.*—Operations at this colliery have been spread over several small rise areas adjacent to the creek. Monyhan's section has been developed to the outcrop cover on three sides, and a few pillars extracted; the coal from this section is transported from the face and directly into the surface fluming by a sluicing system, water for this purpose being dammed back on the surface and carried to the face by means of 3 in. metal pipes and a portable hose length for use at the face. The method has proved efficient, and appears economical wherever applicable. An attempt is being made to work the area situated higher up the creek by a method of driving solid places adjacent to the roof and a lower series of solid places adjacent to the floor of the seam, the object in view being greater safety in operation and a higher percentage of total extraction. A loose gravel wash overlying the seams in these areas will render total pillar-extraction more difficult. The absence of power at this colliery almost prohibits development work being effectively carried out to the dip of the seam.

*Bennett's Mine.*—Very little work was done at this mine during the year.

*Rocklands Mine, Buller Gorge.*—This mine continued to be worked intermittently to supply local trade. The main level has now been extended a total distance of 10 chains in hard coal.

*Whitecliffs Mine.*—Two men are employed to supply local demands, the underground workings having been extended a small distance.

### Grey District.

*Liverpool State Colliery.*—At this colliery two mines, known as Nos. 1 and 2, are being worked. In the No. 1 Mine operations were confined to the extraction of pillars from the Stable, West, and Siberia sections. Towards the end of the year coal-winning operations ceased in the two latter sections, and the plant was removed therefrom. In the Stable section seven pairs of miners are employed. It is anticipated that this small section will be worked out in the course of a few months. No. 2 Mine: With the exception of the extraction of a few pillars from the Anderson old dip workings during the early part of the year, also a few pillars from the No. 3 bank of the Kimbell east section during the latter part of the year, the output at this mine was obtained from solid workings in the course of development. The pillared area in the Anderson old dip section has been sealed off with concrete stoppings. In the Anderson new dip section the main development headings are still being driven in thick coal of good quality. The Kimbell east level has been extended several chains beyond the point where the seam thins, and a pair of headings are being driven to the rise. Although this level is being extended, very little area is being opened up owing to the change in the contour swinging the level to approximately the same bearing as the inclines outby, this being due to the close proximity of the level to a large fault. The Kimbell west workings are approaching the No. 1 Mine workings, and the district is being cut up into pillars preparatory to extraction. Operations in the Morgan seam were confined to the extending of the main level and the inclines in both the east and west levels. In the east level the seam has thinned to 6 ft. 6 in., the direction of the level gradually changing, due to the influence of the same fault that is affecting the Kimbell east level. To the rise the more advanced inclines are approaching the old No. 1 Mine, and the time is not far distant when the pillars will be formed preparatory to extraction below the barrier line. A new double-inlet sirocco fan, capable of producing 160,000 cubic feet of air per minute, was installed at the No. 2 mine, and put into commission during the year. An additional change and bathhouse to accommodate one hundred men was erected at the No. 2 Colliery during the year.

*James's Mine.*—Development work at this mine was confined to the crosscut section, where an area of coal is being opened up between two faults. The coal is of good quality, being 6 ft. to 7 ft. thick. To the west of the main haulage-road a small area of thin coal is being developed. In the old dip and east level sections work during the year was confined to pillar-extraction. The latter section was worked out during the year, and in the former the work of extracting pillars is nearing completion.

*Dobson Mine (Grey Valley Collieries, Ltd.).*—Development work was continued throughout the year in both the dip and rise sections. In the east rise section adjacent to the fault-line the solid work is nearing completion. Work in the west rise section was suspended for six months during the year. During October development work was recommenced and two panels are in the course of formation, one to the dip and the other to the rise of the main west level. The size of pillars in this section has been increased to 1¼ chains square. Subsidiary air-driven haulages have been installed in both sections. To the dip, development has been concentrated chiefly in one main section known as No. 2 west and a subsidiary section known as No. 2 east. In the No. 2 west section three panels are in the course of formation, two being driven to the dip and one to the rise of No. 2 west level. The panels each cover an area of 5 acres. In the dip panels it has been considered advisable to alter the direction of the dip drives so as to secure a gradient of 1 in 5. In opening out the first dip panel a Sullivan Arkutter (air-driven) has been installed, and is working efficiently. The manager states that the output per miner shows a substantial increase, whilst there has been a decided improvement in the percentage of lump coal, due to the improved preparation of the coal for shot-firing. An endless-rope haulage (air-driven) has been installed in this section, and feeds the coal to the No. 2 dip (electric winch) road where a 40 h.p. motor has been installed to supplement the haulage arrangement on the No. 1 dip. Work in the No. 2 east section was suspended for three months during the year. Four pairs of miners are employed in the section. The solid work is nearing completion, and it is proposed to commence pillar-extraction during the coming year. Nos. 1 and 2 dips have been extended a distance of 9 chains and 10 chains respectively, whilst three developing levels have been driven from No. 2 dip to the west for a distance of 8 chains. Also at points coincident with these, from No. 1 dip, levels have been set away and advanced 9 chains. It is proposed to open up from these a series of panels to the dip. The quality of coal has been maintained. Stone-dusting has been carefully attended to, approximately 200 tons having been used during the year. The 50 h.p. motor driving the fan has been replaced by one of 100 h.p. A second air-compressor of 1,000 cubic feet capacity has been purchased to duplicate the one already in use.

*Paparoa Mine.*—The extraction of pillars from the old mine is almost completed. However, a level stone drive has been driven a total distance of 16 chains through barren stratas into a new area of coal, which it is anticipated contains 500,000 tons. The thickness of the seam in this area, as indicated at the outcrops, is 20 ft. In the aerial section development work was proceeded with vigorously during the year, and contributed the greater portion of the colliery output. The main levels were advanced a total distance of 11 chains towards the outcrop in Waterfall Creek. The aerial haulage system which was installed to operate this section has proved a most satisfactory and economical method of transportation. The general outlook at this colliery has improved materially during the year.

*Blackball Mine.*—The output during the year was obtained from the No. 9 dip sections. Pillar-extraction was responsible for the output from the No. 3 west level, and the heatings which invariably accompany pillar-extraction at this mine were promptly dealt with by means of stoppings. A slant dip heading has been driven a distance of 14 chains below the No. 3 west level, commencing at a point 11 chains along the level, the quality of coal in this area being very good. The No. 2 east level has been extended a total distance of 24 chains, this development having provided a large number of additional working-places. The whole of the development places in No. 9 dip below the No. 3 level were abandoned towards the end of the year, owing, it is understood, to the friable nature of the coal. No further work has been carried out in the No. 2 dip section, beyond that of drainage. Considerable trouble has been experienced in maintaining the efficiency of the pumping-plant owing to the corrosive action of the mineralized water on the interior parts of the pumps. Monel metal has been used up to the present for the manufacture of the pump impellors, &c., and it is now proposed to try Stavenger steel for these parts. An ambulance-room has been erected adjacent to the mine-entrance, for use in connection with the more serious accidents. The fittings include surgeon's couch, water-heating (electrical), instrument sterilizer, portable three-tier table, and all the usual first-aid requisites. During the latter portion of the year the mine reverted to working double shift.

*Wallsend Mine.*—Development work at this mine has been carried out chiefly on the east side of the shafts. The dip headings in this section have been advanced a total distance of 13 chains. Levels are being pushed ahead in an easterly direction from these dips, preparatory to forming panels to the rise. The direction of the strike of the measures in this section is somewhat irregular. However, the prospects of an area of good-quality coal being obtained from this section are good. The No. 2 dip heading has been totally dewatered, and coal-production recommenced. However, this place will probably encounter the Taylorville fault in a short distance. The main dip heading from which it is proposed to win the area of coal underlying the Taylorville Township and to the west of the Taylorville fault is now in readiness for extension, having been heavily retimbered, and generally given a permanent appearance. The surface equipment has been materially extended during the year, and is now in a better state to deal with an increased output. Preparations for the installation of a 98 in. double-inlet sirocco fan are nearing completion. This installation, in conjunction with the proposed extended use of concrete stoppings, is a move in the right direction, and is to be commended. The mine is being developed on the panel system, and should soon be in a position to produce an increased output The main return airways were thoroughly swept clean from coal-dust accumulations, and stone-dusted towards the end of the year, in addition to which a large quantity of stone-dust was applied to other roadways and working-places throughout the year.

*Tyneside Collieries, Ltd.*—During the early months of the year preparations were made to drain the Tyneside Mine, which had been flooded for some years. An electrically driven pump was installed of 1,000-gallons-per-minute capacity, and pumping-operations were commenced in March. The level of the water was gradually lowered, progress being decreased during periods of heavy rain, thus proving that percolation from the surface was the chief cause of water entering the underground workings. The water was lowered a sufficient distance by September to make the top portion of the old dip heading visible for a short distance, when it was evident that considerable robbing of the main dip pillars had taken place, with the result that the roof had fallen heavily. Following upon the cleaning-up of the old roadways, it was proposed to drive a dip heading from the main level in a south-westerly direction through the old pillars, the bords in which appeared to be standing well. However, an inrush of water caused the flooding of the mine on 8th October, when all the underground portion of the pumping-plant was lost. The indications were that had a duplicate pumping-plant been added to the original equipment unwatering operations would probably have been successful.

*Briandale Colliery.*—No. 1 section was reopened in June, closed in September, and reopened in November. A small ventilating-fan was installed and the main heading advanced 2 chains in a north-westerly direction. In No. 2 section mining operations were carried out during the year. In No. 3 section pillar-extraction was commenced in May and continued during the year. No. 4 section was commenced early in the year; the main levels were driven a distance of 4 chains in a north-westerly direction, when thinning of the seam took place. The main heading was driven a distance of 4 chains. A steam locomotive was installed to replace the internal-combustion tractor to transport the coal from the mine to the bins. The change has proved beneficial. It will be necessary to carry out further prospecting on this lease in the near future if the life of the mine is to be materially extended, and, in view of the faulted nature of this area, such work will require great care so as to secure reliable results.

*Co-operative Party Mines, Grey District.*

*Spark and Party's Mine, Rewanui.*—The coal to the rise of this lease became stony and unsaleable, as a result of which pillar-extraction was commenced, and continued to the end of the year. A screening-plant was installed towards the end of the year with beneficial results.

*Duggan and Party's Mine.*—The main dip heading encountered old workings, after being driven a few chains, and collapsed. A small amount of coal containing stone remains to be extracted.

*O'Brien and Party's Mine (Old Runanga Co-operative Party).*—The work of extracting the remnants of coal, left behind during the bins extension workings, has been carried on; this work is nearing completion. The development of the seam in the Bluff section has been carried out in a thorough manner. The main levels, which commenced on a 4 ft. outcrop, are now in 6 ft. of coal and have been driven about 7 chains. Ventilation and general equipment at this mine, are, relatively speaking, good.

*Goldlight Colliery.*—During the year a Sullivan Arkutter machine was introduced and applied to the dip section. Unfortunately, a fault with a heavy water feeder was struck, thereby practically eliminating the scope for the coal-cutter meantime. A dip heading has been commenced from a point 2 chains above the main level to prove the direction and extent of the fault. In the event of this development work proving satisfactory, the area of available coal will be materially increased, and the probable reinstatement of the Arkutter will follow, as it is understood the results obtained during the Arkutter's operations were satisfactory.

*Moody Creek Mine.*—Development-work on the southern side of the creek showed satisfactory results. The dip has been driven a distance of 5 chains. Power is supplied by the Grey Electric-power Board, and is used for ventilation, haulage, &c. New bins and screening-plant have been erected.

*New Point Elizabeth Mine* (Guy and Party).—The main rise headings have been advanced a total distance of 14 chains into a softer nature coal, this being due to their proximity to the surface. Levels driven in a westerly direction from a point 12 chains up the heading appear to prove the absence of the fault at this point, in which case the amount of available coal in this direction will be materially increased. Ventilation at this mine is very efficient.

*Fiery Cross Mine.*—The main levels have been driven a total distance of 6 chains. The outlook at this mine has improved materially, the quality of coal showing a marked improvement.

*Baddeley and Party.*—Development work has been completed and pillar-extraction commenced. Surface-subsidence has caused an influx of water during wet weather.

*Castlepoint Mine.*—Development work has been continued along the usual lines. Crosscut headings have been driven to lessen the hand-haulage distances. The ventilation having become sluggish, arrangements have been made to install a larger-capacity fan.

*Armstrong and Party's Hilltop Mine.*—The old mine having been exhausted, the party has secured a new lease on the State Coal-mine Reserve at the Ten Mile Creek. A self-acting incline, 15 chains in length, conveys the coal from the mine-mouth to the bottom bin on the Briandale tramway. From the mine-mouth the coal-seam, 8 ft. thick, dips in a south-westerly direction. The mine has been opened by a dip drive. The coal is hauled to the surface by an electric winch, situated at the mine-mouth. Electric power is supplied by the Grey Electric-power Board.

*Hunter and Party's Mine.*—Development work in the lease acquired by this party has proved reasonably satisfactory. The main levels tended to thin after being driven 6 chains. The rise headings revealed 7 ft. of good-quality coal. Safety-lamps were introduced in September, owing to methane being given off freely in the lower level.

*Scottvale Mine.*—Operations ceased during the year.

*Cox Creek Mine.*—The main dip has been driven a distance of 3 chains. The coal, although thin, is of good quality, and roof conditions are very favourable.

*Schultze's Creek Mine* (Marshall and Party).—Pillar-extraction has been continued in the rise section, which is nearing completion. A level stone drive has been driven 4½ chains to intersect the seam below the fault which cut off the rise workings. It is expected to intercept the coal-seam at a total distance of 5 chains to 6 chains. This drive should open up a reasonable amount of workable coal.

*Dennehy's Mine.*—Operations have ceased meantime.

*Cain's Mine.*—Operations of a routine nature have been continued on a small scale.

*Bellbird Mine.*—Development work carried out during the year has given satisfactory results as regards extent, quality, and thickness of coal-seam. An electrically driven winch has been installed to facilitate further dip-development work.

*Bellvue Mine.*—Development work has shown only fair results with the exception of one pair of headings, driven in a southerly direction, in which the coal has improved materially in quality and thickness. Ventilation was unsatisfactory towards the end of the year. However, a fan will be installed at an early date.

*Jubilee Mine.*—Work has been continued along similar lines to the previous year, the results of development work being satisfactory.

*Smith and Party's Mine, Dunollie.*—The old lease was exhausted during the year, and an area adjoining Castlepoint was opened up. The main dip has been driven a distance of 5 chains, and several levels broken away. The thickness of the seam at the dip face is 10 ft.—*i.e.*, 5 ft. top coal, 1 ft. stone, and 4 ft. bottom coal. The top 6 ft. of the seam is at present being worked.

*Braehead Mine* (Boote and Party).—Pillar-extraction in the rise section was stopped at the end of the year. A level stone drive of 13 chains has been driven from a lower level. Sufficient pillars were left in the old rise section to maintain the present air-course. A reasonably large area of coal has now been made available for rise working, and the future prospects of the mine are good from a mining point of view.

*Remarks on Co-operative Mines in Grey District.*—The extended use of electrical power supplied by the Grey Electric-power Board has been instrumental in improving the underground working-conditions in the small mines, and enabling dip coal to be won profitably. The general rule at present is that each mine has installed an electrically driven fan, winch, and, where necessary, pumps, with beneficial results.

### Inangahua District.

*Burke's Creek Coal-mine.*—The installation of an additional steam-boiler and electrical generating-plant was completed early in the year, and dewatering operations were commenced in March and completed in June. Coal-production was commenced immediately, this being confined chiefly to the west level section and dip-development. The main dip has now been driven a total distance of 14 chains, and is at present in good hard coal. An adequate ventilation-fan has been installed. Underground haulage and pumping-plant is electrically driven. The general equipment at this mine, along with the underground development, now places the colliery in a position to produce an economical output. A comprehensive scheme for developing this mine on the panel system has been arranged, this being the first occasion on which an attempt has been made to open out an area of coal in this field on systematic lines, and the necessary plant installed to provide the desired margin for the successful operation of dip workings. The initiative shown is to be commended.

*Morrisvale Lease.*—(1) Matchless Mine: Work in this mine has been confined to pillar-extraction in the No. 2 seam and a small amount of development work in the No. 3 seam. (2) Saramain Mine: The main dip heading encountered faulty ground after being driven a few chains. There was also an inrush of water from the surface, and as a result the workings were abandoned. (3) Surprise Mine: The main dip heading has been extended a total distance of approximately 5 chains, the quality of coal being good. The installation of a modern plant would be of assistance in obtaining more economical results. It is proposed to develop this mine on the panel system. (4) Perfection Mine: The main levels, after being advanced a total distance of 18 chains, intersected an old fire area. Stoppings were erected and pillar-extraction commenced.

*Archer's Mine, Capleston.*—Coal won during the year has been obtained chiefly from the freehold. Two level headings to the west of the freehold workings have been recommenced in good-quality coal.

*Waitahu Mine.*—Work has been continued on a small scale in the top section. The coal became of inferior quality in the level, and the bulk of the output was obtained from pillar-extraction to the rise and adjacent to the outcrop.

*White Rose Mine.*—Work has been continued on a small scale, the coal being thin with very little surface cover.

*Defiance Mine.* — The work of pillar-extraction in the old mine has been completed and the section closed. Prospecting operations are now being carried on with a view to opening up the seam in the western portion of the lease.

*Terrace Mine.*—The main roadways which were driven through old workings showed signs of heating, and the development places encountered stone bands. As a result of these conditions, pillar-extraction was commenced towards the end of the year.

*Clele Mine.*—All rise pillars have been extracted to within 6 chains from the mine-entrance, a dip heading having been driven to win the remaining available coal.

*Phœnix and Venus Mine* (Collin's Lease).—The fire having spread throughout the whole of the mine-workings, work during the year has been confined to surface-stripping near the outcrops.

*Coghlan's Mine, Capleston.*—Development work has been continued in good-quality coal, and all old roadways have been maintained in a satisfactory condition.

*Lankey's Creek Mine.*—Development work having proved unprofitable, due to thinning of the seam and stone intrusions, a commencement has been made with pillar-extraction, the quality of coal now won being good.

*Times Street Mine.*—The No. 4 seam has been developed for a distance of 500 ft., the coal being up to 30 ft. in thickness, although friable in places, this condition being characteristic of this seam.

*Eone Mine.*—A small area of coal was developed and totally extracted. It is proposed to extend an old crosscut stone measure into the seam at a lower point.

*Remarks on Development.*

Development work in the Reefton field is very lacking in system, unless at the Burke's Creek Mine. Up to the present only the blocks of coal situated above free-drainage level have been worked successfully. There is ample evidence that this coalfield will be subject to spontaneous combustion, and that any attempt to successfully develop the dip areas will require a prearranged systematic plan of operations based on the panel system, and the introduction of electrical power for underground pumping and haulage purposes. The present practice of conveying steam underground is neither economical nor is it conducive towards the safety and good health of the underground workers.

NELSON DISTRICT.

*A. O'Rourke's Mine, Murchison.*—The earthquake damage to the mine has been repaired. Development work throughout the year consisted of driving the main level and one place to the rise. The coal-seam is 2 ft. 9 in thick.

*Marble Creek Mine (Mount Burnett).*—An aerial from the mine-mouth to the bin on the mud-flats has been erected, and coal-production will be commenced early in 1931.

*Winter and Party's Opencast Workings, Motupipi.*—A small amount of coal has been won from surface-stripping.

*Seymour Mine, Owen River* (formerly known as Morgan and Party's Mine).—A new drive some 400 ft. in length has been completed to replace the one destroyed by the earthquake. The main levels have been driven some 4 chains, and a connection has been made to the surface for ventilation purposes.

*Clarke River Mine.*—Very little work was done at this mine during the year.

*North Cape Mine.*—The attempt to remove the water from the dip workings failed, and the mine has been closed.

*Puponga Mine.*—In the No. 1 west section the drives have reached the outcrop to the south and west, and the pillars are being extracted. The future development of No. 2 west section will be to the dip where coal 3 ft. thick of good quality has been proved. Development in the east section is on the longwall method proceeding in a south-easterly direction towards the old Puponga Mine.

SERIOUS NON-FATAL ACCIDENTS.

On the 19th March P. Hart, miner, North Cape Mine, Puponga, sustained four fractured ribs, bruises, and injury to left shoulder, caused by a fall of coal from the roof.

On the 22nd March T. Fenson, miner, Defiance Mine, Reefton, sustained four fractured ribs and contusions of legs and arm, caused by a fall of stone from the roof.

On the 9th April Joseph Morgan, shiftman, Millerton Mine, sustained fractured skull, caused by being struck with a sprag which was displaced by a fall of stone from the roof.

On the 28th April F. Harwood, miner, Clele Mine, Reefton, sustained fractured left ulna from a fall of stone from the roof.

On the 23rd July P. Christana, miner, Bellvue Mine, sustained a fractured forearm caused by a fall of stone from the roof.

On the 8th August Alexander O'Hara, miner, Westport-Stockton Mine, sustained a fractured leg caused by a fall of coal from the roof.

On the 2nd October Wilfred Hinds, Westport-Stockton Mine, sustained a compound fracture of an arm, necessitating amputation. Hinds fell alongside a moving train of trucks from which he had alighted, several of which passed over his arm.

On the 30th October Samuel Hughes, miner, Westportmain Mine, sustained a fractured leg, caused by a fall of stone from the roof whilst engaged in pillar-extraction.

On the 17th November C. Fox, miner, Owen Collieries, sustained a fractured leg, caused by a fall of stone from the roof.

On the 2nd December Robert Finlayson, deputy, Millerton Mine, sustained a compound dislocated fracture of the ankle, caused by a piece of coal rolling down a slope and striking him.

On the 4th December Edward McNeil, miner, Rewanui State Mine, sustained a fractured leg, caused by a fall of coal from the working-face.

FATAL ACCIDENTS.

There were eight fatal accidents recorded during the year.

On 27th January David Binny, horse-driver, was killed at the Deep Creek section of the Ironbridge Mine, Denniston, owing to a rake of trucks, which he was driving, becoming derailed and passing over him.

On 3rd February Thomas Henry Willman, miner, Cardiff Bridge Mine, Seddonville, was killed by a fall of coal from the roof during pillar-extraction.

On 26th February John Vaughan, deputy, Blackball Mine, sustained severe spinal injuries from which he died on 16th July. Deceased was assisting to remove a bar in a haulage-road which was being retimbered, when he was crushed by the bar, and a small fall of coal from the roof and side.

On 9th April David Alexander Marr, shot-firer, Ironbridge Mine, Denniston, was killed whilst proceeding to his work by striking the roof with his head and so breaking his neck.

On 21st May Henry Clunie Burt, miner, Millerton Mine, was killed. Deceased was engaged taking down top coal during pillar-extraction when a piece of coal fell from a height of 21 ft. fracturing his skull.

On 23rd September Samuel Glasson, surface labourer, Blackball Mine, was killed by being crushed between a a railway-wagon, which he was braking, and a temporary support which had been erected under a broken beam in the floor of the bins.

On 7th October Charles Lempfert Skinner, mine-manager, Clele Mine, Reefton, sustained serious injuries from which he died on the following day. Deceased was commencing to take a lift off a pillar, and was in the act of trimming the rib when he was crushed by a fall of stone from the roof.

On 27th November Thomas Edward Kirwan, miner, Paparoa Mine, was killed. A fall of stone and coal from the roof displaced eight sets of timber, deceased being crushed by the debris.

DANGEROUS OCCURRENCES NOTIFIED UNDER REGULATION 82.

During May a workman employed in Young's drive, No. 1 section, Ironbridge Mine, ignited a quantity of gas in the roof of his working-face. As the amount was small he was not injured.

On 12th June smoke was observed coming through No. 12 stopping in the sixth west section, Mine Creek, Millerton Colliery. The stopping was repaired and the fire again sealed off.

During July an excessive quantity of water was observed coming along the main level of the Saramain Mine (Morrisvale lease). On examination it was found that a fall at the face of the level had reached the surface gravels. The mine was abandoned towards the end of the year.

Early in November an inrush of water caused the stopping of coal-winning operations in the dip workings of the Goldlight Colliery.

On 18th November the old fire broke through No. 6 stopping in the third west dip section, Millerton Colliery, but was again sealed off.

On 19th November a heating was discovered in the east dip extension of the Blackball Mine. The section was sealed off and later flooded.

During November the main level in the Perfection Valley Colliery (Morrisvale lease) holed into an old fire area. A clay stopping was erected and the fire sealed off.

On 10th December heating in the goaf adjacent to the horse-road, third west dip, Millerton Colliery, was discovered. The area was sealed off.

PROSECUTIONS.

There were nineteen informations laid during the year. One was dismissed, three were withdrawn, and fifteen convictions were recorded.

For firing a shot not holed or side cut in conformity with Regulation 234 (*b*) (1) a shot-firer was convicted and fined £2 with costs.

For failure to take steps to enforce the regulations relating to shot-firing the manager of the same mine was convicted and fined £2 with costs.

For failure to provide a water-gauge, or either an automatic indicator registering the number of revolutions of the fan or an automatic indicator registering the water-gauge, as required by Regulation 182, a mine-manager was convicted and fined £1 with costs.

For failing to produce by means of a mechanical ventilation applicance an adequate amount of ventilation during the eight hours preceding the entry of men into the mine, as required by Regulation 181 (1), the mine-manager was convicted and fined £1 with costs.

For failing to record without delay in a book to be kept at the mine for the purpose, a report of examinations made in compliance with section 129 (*a*), (*b*), and (*c*) of the Coal-mines Act, 1925, the mine-manager of the mine was convicted and fined £1 with costs.

For failure to record particulars of a discovery of inflammable gas as required by Regulation 82, the manager of the mine, who also acted as deputy, was convicted and fined £1 with costs.

The owners of a small mine were fined £1 10s. and costs for failing to appoint a fully qualified mine-manager in conformity with section 60 (1) (*c*) of the Coal-mines Act, 1925.

The manager of a small mine was fined 10s. and costs for failure to produce an adequate amount of ventilation, as provided by section 91 of the Coal-mines Act.

Charges against an owner of two small mines for failing to appoint a sufficient number of officials to manage the mines, were successful. (Section 198 (2) of the Coal-mines Act.) He was fined £5 and £2 respectively. Two alternative charges against the manager of the mines were then withdrawn.

For allowing on a railway siding a structure below a height of 7 ft. 6 in. to remain within a distance of 5 ft. 6 in. from the centre-line of the nearest rails, the manager was fined £1 with costs. (Regulation 263.)

For failure to keep detonators for blasting stored on the surface of the ground in a covered box placed in a magazine specially provided for the purpose, a mine-owner was convicted and fined £1 with costs. (Regulation 223 (2).)

The charge against a mine-manager for failing to supply a copy of all regulations regarding explosives in booklet form to every shot-firer as required by Regulation 232 was dismissed.

For attempting to fire two shots simultaneously, in contravention of Regulation 234 (*c*), a shot-firer was convicted and fined £1 with costs.

Two charges were laid against a member of a co-operative party as follows: (1) For introducing strangers into a mine; (2) for employing workmen without the permission of the mine-manager or underviewer. The charge against the manager of the mine for a breach of section 60 (1) (*c*) was then withdrawn, it having been proved that the men were working in the mine without his sanction.

## SOUTHERN INSPECTION DISTRICT (GEORGE DUGGAN, Inspector of Mines).

The output from the coal-mines in the Southern Inspection District—489,709 tons—again shows an increase, being 13,711 tons more during 1930 than in 1929. There was a small decrease from the Canterbury mines and small increases in Central Otago, South Otago, and Southland. From North Otago the output increased from 19,189 tons to 27,471 tons.

Only two labour disputes, concerning the mines of this district, occurred during 1930. The Wairaki Mine was idle for a few days in August, and, late in September, a "go-slow" policy was adopted by the miners of the Linton Mines in an endeavour to get the holing and cutting regulations relaxed. The "go-slow" was continued until the 18th November, when a civil action was heard in the Magistrate's Court, Invercargill, and was decided against the miners, who sued for the "make-up" of some wages to the minimum.

Towards the end of the year trade slackened and work is now being rationed at some of the mines, the Wairaki miners having shared work for several months past.

*Prospecting on Freehold Land, Sheffield.*—The small party of working miners renewed their prospecting operations early in the year by driving a lower level a few chains east of their dip prospect drive. After going due south for a chain, a couple of thin coal-seams were met, the upper one 14 in. thick and the lower one 6 in. thick. The level was then turned to the east to follow the seams, but work had to cease there for lack of money. Towards the end of the year an old dip drive, near the foot of the hill, was reopened. This old drive is about 10 chains north of the level driven earlier in the year and is down 90 ft. at a grade of 1 in 4. In a place broken away to the east from the bottom of the dip a 3 ft. seam of clean coal is now being worked to the full dip. A shallow shaft is to be sunk from the surface to connect to the present face for ventilation purposes.

*Springfield Mine.*—Towards the end of the year a new dip was driven at a grade of 1 in 10 for 30 yds. to the southward in a 20 in. seam of fairly clean coal. Off this short dip levels were driven east and west, but the seam pinched in the west level, which was stopped when 16 yards in. Off the east level, 10 yards in, a place has been started to go to the dip.

*Homebush Mine.*—Pillaring was continued to the rise of the main level until July, and since then a block of pillars to the dip has been extracted. Extraction of the remaining rise pillars was recently resumed. A 10 h.p. kerosene-driven engine has been installed on the surface to drive the haulage winch and to replace the small vertical steam boiler and winch. The fireclay sections are almost exhausted and have been abandoned. The owners have purchased the Lucknow Clay-mine for supplies for their pottery-works at Glentunnel.

*Bush Gully Mine.*—Pillar-extraction in the old section was completed in February, and prospecting was then commenced half a mile farther west. A cutting, 2 chains long, was made in the hillside, and then a drive commenced to the south-west. After a while it was deflected to the south for a short distance and then again turned to the south-west. When about 3 chains in a good clean seam of coal 4 ft. thick was cut. At a higher level a crosscut has been driven, and this cut two higher coal-seams, 3 ft. and 3 ft. 9 in. thick, about a chain apart and a chain from the 4 ft. one. All are dipping to the south-east at an angle of about 45 degrees. A short surface jig is being made to the mouth of the crosscut.

*Klondyke Mine.*—The lower seam proving rather dirty, a crosscut was driven to the south-east for 70 ft. and met a higher coal-seam at least 11 ft. thick. A level, going north-east, is now in 16 chains, mostly in good clean coal, but the face being now under a gully, the coal there is full of clay backs. The seam is dipping to the south-east at an angle of 75 degrees. If it improves beyond the gully two levels can then be worked to the rise of the main level.

*Steventon Valley Mine.*—About 10 chains west of the former workings a new drive was put in to the south-west. Within a chain two seams, each about 2 ft. thick, were met, but were too thin and dirty to work. An old fallen-in place had to be crossed and close-lathed sets used. No work was then done for several months, but towards the end of the year a little repair work was done in the drive, but no coal produced.

*Lucknow Clay-mine.*—Two levels are being driven to the west and are now in over 6 chains. From the upper level a rise was put up and connected to an old level near its entrance. This mine was purchased recently by the owners of the Glentunnel Potteries.

*Clearview Mine.*—All the output was produced from pillar-extraction to the rise of the main adit.

*Mount Somers Coal Co.'s Mine.*—The main level, going to the north, is in good hard coal at least 20 ft. thick. At the face, 7 chains in from the entrance, is a 6 in. band of hard stone about 3 ft. up from the floor of the drive while there is at least 6 ft. of coal underfoot. This level, being within 80 ft. of an old dip containing water, a borehole is drilled ahead of the face. Only 2 chains to the west the seam becomes dirty and unsaleable, but an incline 3 chains due east of the main level is in very good coal. An adit level is contemplated to avoid the hand-pumping now being done down the short dip.

*Burnwell Coal Lease.*—No coal is being produced, but about 5 tons of silica-sand are being mined weekly and sent to the glassworks at Ashburton.

*Blackburn Coal Co.'s Mine.*—The railway was completed and formally opened in December. The coal will be lowered from the mine to the railway by a surface jig 27 chains long, the upper portion being at a grade of 1 in 2. From the head of this jig a level is being driven in the 11 ft. seam. Two hoppers will be used on the jig, the mine-tubs delivering into the hoppers and the hoppers emptied into the railway-wagons. At the head of the jig a double drum 4½ ft. in diameter is controlled by post brakes, 4 in. wide, and two for each drum. About 10 chains farther north a level is being driven to the north-west in a lower seam, 5 ft. thick, of rather poor quality. The drive is now crosscutting the measures to the upper seam.

*Albury Mine.*—During the first half of the year the output was obtained from the Woodbank lease, but since then the low level on the Albury lease was extended and then stopped when 2 chains from the old heated area. Near the face of the low level a place was driven to the east and, when a chain in, a rise was put up to the surface for ventilation and haulage purposes. A steam-winch is to be placed at the top of the rise and then a place will be driven to the south in line with the rise and to the full dip. Another level will then be driven under the traffic road into the Woodbank lease, leaving a good barrier between the new and old workings. Only the bottom 6 ft. of lignite is being won. Above is a 6 in. band of stone which has to be taken down, while above the band is another 10 ft. of good lignite.

*Roseneath Mine*—Owing to the fatal accident to the owner, Mrs. Matheson, on the 23rd January, 1930, the mine was closed and no further work has been done.

*Airedale Mine.*—All production for the year came from the dip workings. The lower east levels are within 90 ft. of the eastern boundary and the inby dip is only a little more than 2 chains from the southern boundary. The output improved considerably in quality, and a ready sale is now being found for the slack.

*St. Andrews Mine.*—The main level has not been extended during the year and the two inbye dips are also stopped. One, 3½ chains down, reached an area of stony coal. Another dip has been started outby. Some of the dip pillars will soon be worked back. The inbye place going to the rise and commenced 1 chain back from the end of the main level is now up 3½ chains. The coal, now only 6 ft. thick, is thinning, but hopes are entertained that it will again thicken. Off this rise two levels met outcrop coal when only 2 chains in. Pillars are being formed 30 ft. square. A 15 in. sirocco single-inlet fan, driven by a 1 h.p. motor, is being installed. About 60 chains of transmission-line had to be put up to connect to the power-lines.

*Ngapara Mine.*—About 10 chains in from the mine entrance two places were driven to the south, rising at a grade of 1 in 4. They appear to be approaching the outcrop. The places are driven narrow and are being cut on one rib. Prospecting on the surface disclosed a stratum of fine clean sand suitable for plaster-work. Below the sand and above the lignite is a good thickness of clay suitable for earthenware pipes. If the clay warrants working the coal will be stripped and worked as opencast.

*Shag Point Coal-mining Co.'s Mine.*—All available pillars in Hancock's and Perry's dip sections have been extracted. To the east off Perry's dip four miners are working coal 3 ft. thick with 15 in. of stone above up to a clean parting. In the small longwall section on the west side four miners are on coal now 2 ft. 3 in. thick. It is gradually thinning, so that section may soon be stopped. On the east side some places are being made ready for working pillars to the rise of the old water-level. Two short crosscuts have been driven out of the main level to a small seam 17 ft. below the upper one. One of these crosscuts is near the head of Perry's dip and the other is 3½ chains inby. Two levels have been driven to the west for 6 chains, the coal being of good quality but thin, varying from 2 ft. 8 in. to 3 ft. in thickness. Six miners are now employed in the lower seam-workings; two in the south heading and four in places going to the west. Four shiftmen are constantly employed in the return airways, and the arrangement for air-reversal near the ventilating-fan has been much improved recently.

*Shag Point Mine (Old).*—The main dip has not been extended for some months and is now 500 ft. down. The north levels met a large downthrow fault only 30 yards in from the dip in the upper level and 3½ chains in the lower one. Development is solely to the south; the bottom south level has entered an area of dirty coal, but it is expected to improve soon with another chain of good coal ahead. All the slack is now being sent out of the mine and most of it is distributed on the clay road leading to the terminus of the Shag Point Coal-mining Co.'s railway. The slack beds into the clay and forms quite a serviceable road of what was formerly a quagmire in wet weather. The haulage winch is now driven by a 10 h.p. three-phase 400-volt Crompton-Parkinson slip-ring motor through a chain drive to an intermediate shaft, and then geared back 4 to 1.

*Rough Ridge Coalpit.*—A few tons for home consumption are still being taken out of this small opencast pit.

*Idaburn Pit.*—A considerable amount of stripping has been done at the north-east end of the pit, and there is a face of 18 ft. of lignite exposed, but the top 10 ft. is of very poor quality.

*Oturehua Pit.*—To the east the stripping has been kept well ahead and there is a thickness of 14 ft. of lignite exposed, but only about 5 ft. of it near the floor is saleable. A dip has been driven to the north at a grade of 1 in 4. This dip is now down 100 ft., and is well supported by timber sets.

*Parfit's Pit.*—From the north-west side of the pit a small supply has been won, but a large slip came down and almost filled the pit. A considerable amount of work must be done in removing the debris before any more lignite can be worked.

*Cambrian Pit.*—Work has proceeded on the west side, but further stripping is required and the pipe-line shifted back before much more lignite can be won.

*Coal Creek Flat Pit.*—The top portion of the thick seam is being worked at the north-east corner of this large pit. The face there is 12 ft. high and the lignite is being mined with hammer and wedges and without the use of explosives. A small output is also being won from the lower portion of the pit. Sufficient hydraulic stripping has been done for several years' output, and only the top portion of the seam has been won from an area of about 2 acres where there is still from 15 ft. to 30 ft. of lignite to be got. Two hydraulic nozzles are used for stripping.

*Shepherd's Creek Mine.*—The bottom south level has been extended through some of the old workings, and it is again approaching an old drive. When that is holed into, pillar-extraction will be commenced, for which a large supply of prop-timber is on hand.

*Nevis Crossing Pit.*—One man is employed intermittently getting household coal.

*Freeman's Mine.*—Four miners are on pillar-extraction and are coming back quickly with the small pillars. Owing to a heaving floor "brushing" has to be done either in the floor or the roof of some of the trucking roads. The working-places are being well supported by blue-gum props, and many of the timber sets along the main level have been renewed lately. The goaf is closing nicely and there is no sign of heating now.

*Jubilee Mine.*—The upper north levels were approaching old workings and were stopped and a small section of pillars worked back to within a chain of the crosscut. In the lower north levels the coal again thickened to 7 ft., so they were extended until the faces were 11 chains from the main dip. As sufficient output could be got from the south workings, those on the north side are temporarily stopped. In the upper south workings six solid places are being worked towards the boundary; these will last only another three months. Five miners are splitting pillars below and three are on pillar-extraction. Some of the upper south places were within 5 chains of the old No. 4 section workings which were pillared about four years ago. A couple of pillars were extracted and on the 19th October an inflow of water came from this pillared area and submerged the small electrically-driven pump. This has since been recovered, and the water, having pined off, is now causing no trouble.

*McMaster's Saddle Hill Pit.*—This pit is near the old Saddle Hill workings of many years ago. The 5 ft. seam of coal is outcropping north of an old fallen-in drive where an underground fire has burned most of the nearby coal. A face of about 30 yards in length has been stripped of the 6 ft. of gravel and clay overburden.

*Willowbank Mine.*—The prospect drive to the west proved very disappointing, the upper seam—met about 2 chains in—being only about 3 ft. in thickness. After driving a short distance farther a downthrow fault was met. A borehole was then put down 44 ft., but no coal was found. After driving a few yards to the east the the small amount of pillar-coal was then worked back. Pillaring was continued in the main section and the pillars were extracted to within 5 chains of the mine-entrance. Then a slant dip was commenced about 3½ chains down the main dip, and at an angle of about 60 degrees. Two chains down very troubled country was met and later a downthrow fault. Beyond that fault a good seam of coal 12 ft. thick was proven. The dip is now down 5 chains, and is still in good coal. Levels have been driven to the north-east and are now in 5 chains from the slant dip, and a return to the rise has been completed.

*Waronui Mine.*—The small section to the rise of the old No. 1 Mine proved very disappointing. The main dip was driven over 1,000 ft. and reached soft mushy coal about 5½ ft. thick. A small section was worked to the north-west and also reached soft coal, so the pillars were split. The roadways were constantly heaving, entailing many renewals of timber supports. A large fall occurred in the main return-airway in September, and the workings became filled with blackdamp. In endeavouring to complete another return-airway the mine-manager and one of the miners were asphyxiated by the blackdamp. The small amount of workable coal remaining did not warrant the expenditure necessary to put the mine in order, so no further work was done. The prospect drive, on the west side of the railway-line, was continued to 960 ft. and, proving no coal, was abandoned in December. It was then decided to sell all the mining plant and gear.

*Viewbank Mine.*—No work has been done at this mine during the year.

*Elliotvale Mine.*—The level to the west nearing the outcrop was stopped. To the south a dip has been driven about thirty yards in fairly good coal. The small amount of water which accumulates there has to be baled out, as they have no pump.

*Reid's Mine, Lovell's Flat.*—This old lignite mine was reopened by two Waronui miners. They commenced driving to the west out of an old level and cleaned up some old workings, but the lignite was very soft. On 11th December they notified me that they were giving up mining there, and have since applied for a coal lease over an area near the Waronui Mine.

*Taratu Mine.*—The output was again solely from pillar-extraction in Barclay's section. Three pairs of miners are on the east side pillars which may last another six months. A small area on the west side was sealed off last year owing to heating. Two concrete and two ash-and-block stoppings were built to seal off the inby portion of the heated ground. Miners will soon commence to pillar the cooled area outby those stoppings. A new dip drive, 6½ ft. by 6½ ft. at a grade of 1 in 4½, is now being driven into an area between Barclay's section and the old Shaft section. The main seam was proven by hand boreholes to be 14 ft. thick and it is expected that the drive will reach the seam at 700 ft. The dip is now down 4½ chains, and is in line with the first portion of the surface haulage-road. The formation for the extension of the haulage-road is now being made.

*Lakeside Mine.*—No further work was done in the stone drive in which the large fall occurred last year, but instead a crosscut is being driven from the bottom of the main dip to connect with east workings inby, and thus shorten the trucking-road. The crosscut, now in 200 ft., is rising at a grade of 1 in 4½. At 80 ft. a downthrow fault was crossed and the place has another 60 ft. to go to hole through. Coal-production has been continued from the south levels, which are now in 11 chains from the main dip, and from a few places to the rise.

*Wangaloa Mine.*—The main level reached the northern boundary of the lease when 5 chains in, so had to be deflected to the west. Soon after it holed into Gage's old workings and, being continued, reached the west boundary when 8 chains in. The pillars are now being extracted from the north-west corner of the lease. Soon it is intended to prospect in a small hill south of the present mine, where it is anticipated there is a small area of workable coal.

*Kaitangata No. 1 Mine.*—Most of the output was produced from the No. 2 section of the No. 1 seam. Development was continued to the east by extending Kyle's dip, the former back heading to Newburn's dip. Kyle's dip was stopped in coal 6 ft. thick when it was 21 chains down from where the coal was first met in the No. 2 section. In the lower north levels off Kyle's dip the seam gradually thinned so those levels were stopped. The face of Fuller's dip, going south-east and 7 chains from that of Kyle's dip, was showing 6 ft. of coal when it was stopped, but the bottom south level off Fuller's dip entered coal only 4 ft. thick when only a chain in from the dip. O'Fee's dip, also going south-east and 9 chains from Fuller's dip, was stopped when 12½ chains down in thinning coal with a very tender roof. Pillaring has proceeded to the south of O'Fee's dip since early in the year, and a small section of pillars is being worked between O'Fee's and Fuller's dips. The dip to form the second panel to the north was stopped when 8 chains down. Levels to the north of this dip, called Leishman's, were in thin coal containing a stone band. They met two faults, the first one of 6 ft. and the other 20 ft. farther in. The levels were stopped about 6 chains in. A rise was put up from the bottom level to ascertain if a higher seam existed there. After passing through 40 ft. of clay containing a few very thin coal-seams the rise was stopped, and it was decided to work back the pillars north of Leishman's dip. The new main return-airway, 1,400 ft. long, was completed in June, and recently the ventilating current was split, one split ventilating the south workings and junctioning with the north split near Kyle's dip. The inby portion of the main haulage-road was widened to enable the extension

of the endless rope, and direct haulage is now used in a crosscut driven from near the end of the main haulage-road to the No. 1 seam-workings. A small seam was cut in the crosscut and a place was driven for 30 yards to the north, but the seam thinned to 2 ft. To the south of the haulage-road into No. 1 seam a prospect dip was driven into that seam. When first met it was 5 ft. thick, but it is only 2½ ft. thick at the face. The water flowing down the new main return-airway has been picked up and conveyed 3,000 ft. to the main haulage-road by 2½ in. pipes, and there enters the main lodgment.

*Kaitangata No. 2 Mine.*—Pillaring was continuous in the No. 6 section and very little remains to be extracted therefrom. The slant dip in the No. 2 seam section has been driven 15 chains to the south-west, but, not being to the full dip, it was stopped. When the upper south levels from near the head of the slant were in 12 chains the coal thinned, so pillaring was commenced. In the upper north places the seam was from 5 ft. to 8 ft. in thickness. From a lower north level a dip place was driven almost due west. When 4½ chains down an upthrow fault of 15 ft. was met. To cross this fault an incline at a grade of 1 in 5 was driven and at the top of the incline 8 ft. of coal was worked. A level has been driven 4 chains to the south, from below the fault, in coal 6 ft. thick. A place has been set away to the south-east from this level and a connection will be made back to and on the bearing of the slant dip. This will shorten the haulage considerably when it is effected.

*Benhar Mine.*—The main dip is now down 800 ft. from the surface, and is still in good clean lignite. The upper south levels, approaching the barrier between the old and the new mines, have been stopped. The top north level is in 5 chains from the main dip. The seam is full of clay backs there, so that place will soon be stopped. The rest of the places both north and south are in clean lignite. The ventilating-fan was removed from its old site and installed, with arrangements for air-reversal, at the new mine early in the year. The old mine was then sealed.

*Brighton Mine.*—Having driven under the traffic road and left a barrier to the east of that road a level was driven to the south east. From this level a back heading was broken away to go back and parallel with the drive under the road. The seam proved to be dipping there instead of rising. To the north-east the seam is also dipping, so it appears that the drive under the road is on an anticline. They will soon give up working this mine, and reopen another nearer the main Brighton Road.

*Green's Mine, Gore.*—The electrically driven centrifugal pump arrived early in the year and was installed near the bottom of the main dip. The 20 h.p. totally enclosed squirrel-cage A.C. motor is direct-coupled to a 4 in. single-stage pump, capable of 10,000 gallons per hour against a head of 155 ft. The main dip has been extended only 3 chains below the deviation, and most of the output for the year was produced from the north places. At the face of two of those going towards the old workings a considerable quantity of water was seeping so they were stopped. The plan shows one of these places to be 2¾ chains and the other over 3 chains away from the old workings. An automatic indicator has been procured for the ventilating-fan and records 0·10 in. of water-gauge.

*Otikerama Mine.*—This was originally an opencast pit, but it was decided to put in drives to the north and south. The north level is about 2 chains in, but, being driven too wide, the owners were instructed to reduce the width to 14 ft. The south level is also in 2 chains and will reach the boundary in another half-chain.

*Ramsay's Pit, McNab.*—From 6 ft. to 8 ft. of bottoms were taken up, and as the lignite was thinning to the east and south the pit was abandoned on 2nd August, 1930.

*Rosedale Pit, McNab.*—This pit was formerly worked by a Mr. A. Reinke, The clay overburden, about 6 ft. thick, has been stripped for a dozen yards in length and 6 ft. in width over a seam of lignite 20 ft. thick. A small petrol-driven pump is used to unwater the pit.

*Hakatea Pit, Waimumu.*—To the north a fair amount of stripping has been done and is kept well ahead of the face of lignite, which is 12 ft. thick with only 3 ft. of clay overburden.

*Larking's Pit, Waimumu.*—Mr. P. Larking, formerly of Mataura, has recently opened up another lignite-pit about 20 chains east of a traffic road and 30 chains from the Hakatea Pit. A long trench was cut to the floor of the seam and 2 in. pipes laid in the trench. About 8 ft. of lignite is being worked with 3 ft. of clay stripping. A tramway of 3 in. by 2 in. scantlings has been laid across a paddock to the traffic road.

*Glenlee Mine.*—Work in the main north level was resumed early in the year, and has been continued there and also in a place to the south-east. The timber supports at the mine-entrance have been renewed with blue-gum sets.

*Ramsay's Mine, North Chatton.*—The land was sold for grazing purposes, and no further mining will be done.

*Argyle Pit.*—The new water-race has been completed, and, with the new dam, is now in use. Work has been continued to the south, and a good supply of lignite has been stripped. Further stripping will be done before the demand for lignite again increases, and the shorter route for the tailings will be completed from the pit to the Waikaia River.

*McIver's Pit, Waikaia.*—A considerable amount of stripping has been done to the south-east and the small output was obtained from bottoms, near the centre of the pit.

*Northcoat's Pit, Waikaia.*—Early in the year the small output was rather dirty, owing to clay backs and there not being sufficient water available to wash away the clay. At the north end of the pit the stripping contained large boulders of greywacke. In October a large slip occurred, about half-way along the face, burying many tons of lignite which had been stripped. Owing to shortage of water, they have not yet been able to remove the debris, but have continued working to the north, where they are working the top of the seam.

*Wendon Mine.*—Some more top coal was won from the old mine, and then the new dip, 15 chains to the south, was again worked. It is now down about 3 chains at a grade of 1 in 5, and has only a few yards farther to go to reach old workings. The seam is of good quality and almost vertical, and contains many clay backs. When the old workings are reached, the tops, about 10 ft. in thickness, will then be worked back.

*Terrace Mine, Kingston Crossing.*—This mine was abandoned towards the end of 1929.

*Princhester Creek Pit.*—Stripping has been continued to the east, and a sufficient supply got ready for the winter trade. Further east the overburden is light. To take advantage of the small amount of sunshine in the gully the upper portion of the seam was worked first. The water-supply for sluicing away the overburden was much restricted during the first few months, but there is now a fair supply in the dam. At the north-west corner of the pit the seam is now only 2 ft. thick and, should it continue to thin along the north side, only about 200 tons remain to work from this pit, but prospecting farther to the north may reveal additional supplies.

*Boghead Mine.*—For another year the dip has not been extended and the output has been won from the bords to north and south. The faces of the two lowest north bords are about a chain away from the boundary, and the places to the rise have been stopped. A little lignite was also won from an opencast area north of the mine-entrance.

*Mataura Lignite Mine.*—Development to the south-west was completed in September. The dip was again worked and has been extended 4 chains, the face now being 19 chains from the surface and within a chain of the boundary. The extension of the dip was kept within the stipulated width of 12 ft. and height of 8 ft. Five miners are employed at present in the lower east bords.

*Larking's Pit, Mataura.*—Stripping was continued to the south and east, but the overburden increased to over 13 ft. in thickness. It became unprofitable to work the pit, which was closed in July.

*Ota Creek Pit.*—Lignite was won intermittently during the year from the south end of the pit.

*Wyndham Pit.*—No work was done at this pit during the year.

*Gabites' Pit, Menzies Ferry.*—This pit has been abandoned.

*Prospecting near Pukerau.*—A "diviner" having stated that bituminous coal would be found at about 300 ft. depth about two miles north of Pukerau, a syndicate put down a 4 in. diamond-drill borehole there. After passing through clays and gravels the hole met argillite at about 100 ft. and was continued in that rock until 480 ft., when it entered a compact greywacke containing a few veinlets of calcite. Boring was continued to 606 ft. in the greywacke.

*Diamond Lignite Pit.*—The lignite, which has been stripped at the north end, is nearly all won, and, as that end of the pit is nearing a dwellinghouse, work will soon cease there and be recommenced at the west side.

*Black Dimond Mine.*—Only seven miners are employed at this mine, and even that small number is working only half-time. The solid work being completed, pillaring was commenced in the north-west section in May. Weight came on the pillars being extracted near the fault, and eight good chocks, built of railway sleepers, were buried in the subsequent fall. A line of pillars was then left in and pillaring recommenced outby them.

*Smithvale Mine.*—The overburden becoming too thick for further opencasting it was decided to drive on the lower 5 ft. of coal. Above this is 2 ft. of hard stone and then 4 ft. of fairly good coal. A place has been driven about 30 yards to the south-east, and off this a level to the north. A large fault was met with, so the few pillars were extracted. They then resumed working an old opencast pit about 15 chains farther east where there is from 6 ft. to 8 ft. of fairly clean coal with only 3 ft. of stripping.

On freehold land between the traffic-road and the railway a dip has been started at a grade of 1 in 6 towards the west and to go under the traffic-road. If coal is proven under the road the drive will be extended into a 45 acre block, a lease of which was recently applied for. The haulage-winch is driven by a 16 h.p. A.C. motor, and a 2 h.p. motor, drives the 2½ in. pump. A small sirocco ventilating-fan has been installed, and is also driven by a small A.C. motor.

*Mossbank No. 1 Mine.*—The splitting of the pillars in the No. 5 section was completed and that section was stopped off near the end of the year. Three pairs of miners are splitting pillars and working back tops in the No. 4 section. In the south-west corner of the lease solid places are being driven. The coal is very variable there, in some places being very stony and in others fairly clean. The places going south met a downthrow fault, and were stopped within 2 chains of some rise places in the Mossbank No. 3 Mine.

*Mossbank No. 3 Mine.*—The main dip has not been extended, but early in the year several levels were driven to the west in rather dirty coal. A large fault, running about north-west by west, cuts off these levels. In one place the fault appeared to be an upthrow, but in another, to the south off the bottom level, there is only a narrow strip of barren country and then a 4 ft. seam of clean coal was met in the floor. This was driven on and the fault proved to be an upthrow of 15 ft. vertical displacement. The bottom 3 ft. of coal is very dirty, but there is at least 11 ft. of clean coal above. Places to the rise met the other fault which was struck by places in the Mossbank No. 1 Mine.

*Mossbank No. 2 Mine.*—All available pillar coal having been extracted, the mine was abandoned in December.

*Lobbs Hill Mine.*—The main level going east is now in 2½ chains. At the entrance the coal was 4 ft. thick, but it has thinned to 3 ft. at the face. Off the level, inclines were driven to the north, and in one, a new return airway, the coal is 4 ft. thick at the face. Although the coal is clean and hard there is little demand for it.

*Wairaki No. 1 Mine.*—Pillaring in the No. 1 east section was completed in April and then the section was effectively sealed off. In the No. 2 east section the main levels were stopped 11 chains south of the line of the traffic-road. There a vertical fault, apparently a downthrow, was met. Some of the rise places were in thin and very dirty coal, so they also were stopped, and the inby pillars are now being won. Two prospect dips are to be driven below the No. 2 east level about 20 chains in from the main dip. If these places prove workable coal, dips will be driven from the surface in line with them, and thus form a much shorter haulage route than the present one. The inby portion of No. 3 west section proved very disappointing, so stoppings were put in the main and back levels about 3 chains from the faces. From about half-way in from the main dip in the No. 3 west level a dip was driven to the south-west. It is now down 4½ chains, but is mostly in stone. At the face is 5 ft. of sandstone with only a thin seam of coal below it and a 2½ ft. seam above the stone. A small shaft sunk about 20 ft. back from the face passed through a 4½ ft. seam of dirty coal. It is now down 25 ft. and in sandstone. Pillaring is in progress at both east and west ends of the rise portion of the No. 3 west section, also in Nos. 1 and 2 west sections. Pillaring of the top panel in the No. 1 west was completed in November and the waste has been sealed off. A new lamp-cabin was built for the Ceag electric safety-lamps, of which sixty of the cap type and twenty hand-lamps are in use. A 5 h.p. D.C. generator charges the lamps.

*Wairaki No. 2 Mine.*—Two pairs of miners were employed early in the year at pillar-extraction on the west side, but owing to slackness of trade work ceased at this mine, and has not yet recommenced.

*Linton No. 1 Mine.*—Pillaring in the old rise section was completed in April and it was then sealed off by concrete stoppings. This section of old workings heated and gave great anxiety in August owing to the fire breaking through to the surface. Men were at once employed filling up the breaks to the surface, and the fire was subdued.

The north-west heading—the main haulage-road—has not been extended during the past year, but work was recommenced in the back heading in September. It is now down 400 ft., at a grade of 1 in 2½, below the south-west heading, the coal being again met at 300 ft. A stenton will soon be driven to the line of the main dip which will then be set away to connect to the face of the stenton. A pair of headings have been driven to the south-west from near the face of the north-west heading. The main south-west heading is called Manderson's dip, and about 12 chains down it met a 20 ft. upthrow fault running about east and west. A wooden gantry has been built, over which the coal from the inby side of the fault is conveyed. A large blower of firedamp was given off when the back heading reached the fault. To the rise of Manderson's dip three places are now being worked. A pair of headings have also been driven to the north-east from near the face of the main dip. The main north-east heading is up about 12 chains, and has crossed out of the Crown lease into freehold land to the north. Owing to entering a stony area Adam and Eve's dip was stopped when 11 chains down, but three places are being driven to the north-west in that section. A crosscut was driven into the faulted area to the north of the face of the main dip. This place was stopped when 2½ chains in and still in stone. The double-inlet Sirocco ventilating-fan of 63 in. diameter was installed at the top of the new air-shaft in June. It circulates 48,000 cubic feet of air per minute at a water-gauge of 1 in. A new travelling road into the mine is now in use. To cope with the increased flow of water an electrically driven three-throw pump was purchased in England. The motor is of the slip-ring type, provided with certified flameproof slip-ring covers. The oil circuit-breaker and rotor-starter are also flameproof. A brick chamber was built for the pump in a cut-through off the main intake airway 11 chains down from the surface. Near the deputies' cabin on the surface a good ambulance-room has been fitted up. It is provided with a stretcher-bed, a large cupboard containing first-aid equipment and another cupboard containing an oxygen resuscitator, two sets of Siebe-Gorman hose helmets and two of "Proto" apparatus.

*Linton No. 2 Mine.*—The fire in the sealed-off No. 1 south section caused much anxiety in June. It worked back to a concrete stopping in a level 5 chains down from the mine entrance. At one time a thermometer, hung on the centre of the stopping, registered 80° Fahr. Water was pumped in to the heated area through breaks to the surface and the breaks were then filled with clay. In May the No. 2 south section was reopened, and since then two pairs of miners have been pillaring there. Pillaring in the high coal in the No. 3 south was also continued throughout the year, but large losses occurred through roof stone in

the goaf burying quantities of saleable coal. All available coal having been won from that section, it has been sealed off. Pillaring was also commenced in the No. 4 south section in July, and two pairs are working back the pillars. There is another pair on pillar-work in the No. 5 south section. A few solid places are being worked in No. 6 south. The main dip is now down 31 chains from the surface, and the back heading on the north side is 2½ chains ahead of the face of the main dip.

*Birchwood No. 2 Mine.*—When 830 ft. down, the main dip heading proved a seam of resinous coal 5½ ft. thick, and the main seam was met at 930 ft. Soon after, papa intrusions were showing at the face. The seam was rather dirty when first met, but the main and back headings have been driven in clean coal since, and at about 20 chains in the seam was almost level. A pair of headings were then driven to the north and another pair to the south, and places worked off these headings. Seventeen single places are now being worked, five of them on double shift. Those to the south-east contain stony bands, but the others are in fairly clean coal. A small quantity of firedamp was reported in January in the back heading, and firedamp has been reported on many occasions since, so the mine is proving rather a gassy one. Wherever practicable the coal is being cut before blasting and shot-firers have been instructed that in all places the shots must be properly placed in relation to the work they have to do. An Ingersoll-Rand air-compressor, 12 in. by 10 in., was installed early in the year.

*Black Lion Mine.*—All production during the past year was from the lower seam-workings in the east section. All places in the north section entered thin coal, so that section was stopped late in 1929. In the lower seam the coal is fairly clean. In the main south-east level a downthrow fault was struck when the place was about a chain away from the Morley Stream. When first met the fault was running north 30° east, but in places to the rise it is more to the northward and has cut off all places to the east. In the places going to the north a still lower seam from 4 ft. to 6 ft. thick was met, but the places rose steeply, and, as the coal is thinning rapidly, work will soon be confined to a small dip section south of the south-east level.

### Fatal Accidents.

*Roseneath Mine, Kurow.*—On 23rd January Mrs. M. Matheson, the mine-owner, was suffocated by a fall of lignite about 24 ft. down from the mine-entrance. The miner in charge had informed her of danger there, but out of curiosity she went down at 3.30 p.m. to the defective place. Soon after she arrived there the sets collapsed and buried her, and her body was not recovered until 6 a.m. the next day.

*Waronui Mine.*—On 18th September, at about 12.30 p.m., James Carruthers, the mine-manager, and Joseph Morris, miner, were suffocated by blackdamp when breaking through from a new auxiliary return-airway to the main return. Owing to the timber sets collapsing in the main return some days previously, blackdamp collected there. When chopping a lath above the sets in the main return Morris was overcome by the carbon-dioxide gas and fell to his waist through the hole made in the lath, his legs remaining above. Carruthers endeavoured to pull him up out of the hole and was also overcome. Other workmen made efforts to rescue them, Robert McDonald being also overcome by the gas and had to be taken to the hospital. The bodies could not be recovered until Mr. William Carson, equipped with a smoke helmet, arrived from Kaitangata about four hours after they were overcome.

### Serious Non-fatal Accidents.

*Birchwood No. 2 Mine.*—On 21st January P. L. Magee, deputy and shot-firer, was struck by a piece of stone which ricochetted into the crosscut where he was standing, from a shot in the dip and over 60 ft. away. He sustained a fractured right fibula.

*Linton No. 2 Mine.*—On 16th April Thomas Moore, trucker, sustained a fractured right humerus. While pushing a tub he overbalanced and fell on his shoulder, thus breaking his arm.

*Mossbank No. 1 Mine.*—On 5th August Thomas Wells, jun., had his right femur broken by a fall of top coal. It fell from a mucky "back" about 2 ft. above the level of the top of the 7 ft. props and on to Wells's shoulder or back, not actually striking the leg.

### Dangerous Occurrences notified under Regulation 82.

*Wairaki No. 1 Mine.*—On 13th March an underground fire in the No. 1 west section crept through a stopping, so the men were withdrawn and the stopping reinforced. Later all stoppings in that district were doubled.

*Albury Mine.*—On 8th April slight signs of heating were noticed at a fall in an old bord. Three stone stoppings were built to seal off the area.

*Jubilee Mine.*—On 19th October the electrically driven pump was submerged by water from a small pillared section on the south side. Two other pumps were purchased and, to obtain storage room until the submerged pump was recovered, two concrete dams were put in the lower south levels.

### Prosecutions.

There were twenty informations laid during the year and convictions obtained in all cases.

On 24th February a mine-manager was fined £10 and costs for a working-place being insufficiently ventilated. For failing to appoint a proper shot-firer he was fined £5 and costs, and for three breaches of the regulations dealing with explosives he was convicted and ordered to pay costs.

The same day an underviewer was fined £5 and costs for permitting shots to be fired in a place before it was examined by an authorized shot-firer, and he was also convicted and ordered to pay costs for two other breaches of the Explosives Regulations.

On 24th February an underviewer was fined £1 and costs for failing to search the workmen employed underground in a safety-lamp mine, and a deputy was fined £1 and costs for failing to keep the detonators issued to him.

Another deputy was fined £1 and costs for not making a proper inspection of a working-place before the men commenced work there, and a miner was fined £1 and costs for firing shots without being the holder of the necessary qualifications.

On 15th April three miners were convicted and each fined 10s. and costs for entering a mine before it was inspected.

Another miner was fined 5s. and costs the same day for a similar offence.

On 30th September a mine-manager was fined £3 and costs for not timbering a working-place in compliance with a notice from the Inspector.

On the same day a farmer was fined £2 and costs for acting as a manager of an opencast pit without being qualified to do so.

On 4th November a mine-manager was fined £1 and costs for failing to keep explosives in a secure case or canister; and he was also fined £1 and costs for not providing a suitable thawing-pan for gelignite.

# ANNEXURE B.

## COLLIERY STATISTICS, 1930.

| Name of Mine and Locality. | Title held (Crown Lease or otherwise). | Name of Mine-manager. | Name and Address of Owner. | Number of Years worked. | Classification of Coal. | Number of Seams worked. | Thickness of Coal-seams. | Thickness worked. | System of Underground Working. | Number of Winding-shafts. | Depth of Shaft or Length of Tunnel. | Total Output for 1930. | Total Output to 31st December, 1929. | Total Output to 31st December, 1930. | Number of Persons ordinarily employed. | | | Means of Ventilation. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Above. | Below. | Total. | |
| **NORTHERN INSPECTION DISTRICT.** | | | | | | | | | | | | | | | | | | |
| *North Auckland District.* | | | | | | | | | | | | Tons. | Tons. | Tons. | | | | |
| Hikurangi Shaft Colliery, Hikurangi | Crown lease and freehold | J. Makinson .. | Hikurangi Coal Co., Ltd., Auckland | 8 | Sub-bituminous | 1 | 7′ to 10′ | 7′ to 9′ .. | Bord and pillar | 2 S | S. 350′, S. 340′ | 46,773 | 347,989 | 394,762 | 49 | 138 | 187 | Blackman fan. |
| Silverdale Colliery, Hikurangi .. | Crown lease .. | E. A. Foot (U.) .. | S. G. Foot, Hikurangi .. .. | 12½ | Ditto .. | 1 | 3′ to 5′ | 3′ .. | Ditto .. | 1 T | T. 120′ .. | 1,477 | 34,524 | 36,001 | 1 | 4 | 5 | Natural. |
| North Co-operative Colliery, Hikurangi | ,, .. | E. A. Cunningham(P.) | E. A. Cunningham and Co., Hikurangi | 12 | ,, .. | 1 | 4′ .. | 4′ .. | ,, .. | 1 T | T. 60′ .. | 1,405 | 31,533 | 32,938 | 1 | 4 | 5 | ,, |
| Wilson's Colliery, Hikurangi .. | Crown lease and freehold | G. Davidson .. | Wilson's Collieries, Ltd., Auckland | 13 | ,, .. | 1 | 6′ to 10′ | 8′ .. | ,, .. | 1 T | T. 3,900′ .. | 58,787 | 487,355 | 546,142 | 39 | 149 | 188 | Sirocco fan. |
| Waro Colliery, Whangarei .. | Way leave and freehold | J. B. Ross .. | British Standard Cement Co., Ltd., Wellington | 20 | ,, .. | 1 | 5′ to 10′ | 9′ .. | ,, .. | 1 S | S. 120′ .. | 4,585 | 54,822 | 59,408 | 3 | 13 | 16 | Fan. |
| Ruatangata Colliery, Hikurangi | Freehold .. | F. H. Kells .. | Kamo Potteries, Ltd., Whangarei | 10 | ,, .. | 1 | 8′ .. | 6′ .. | ,, .. | 1 T | T. 400′ .. | 4,987 | 14,710 | 19,697 | 2 | 11 | 13 | ,, |
| Phœnix Colliery, Hikurangi .. | Crown lease .. | W. McKinlay (D.) | McKinlay and party, Hikurangi | 3½ | ,, .. | 1 | 3′ to 10′ | 3′ to 10′ .. | ,, .. | 1 T | T. 66′ .. | 3,407 | 4,137 | 7,544 | 1 | 5 | 6 | Natural. |
| Christie's Colliery, Hikurangi .. | Freehold .. | H. Tipton .. | J. R. Reyburn, Whangarei .. | 8 | ,, .. | 1 | 4′ .. | 3′ to 4′ .. | ,, .. | 1 T | T. 60′ .. | 4,742 | 43,915 | 48,657 | 1 | 7 | 8 | ,, |
| Tauranga Block, Hikurangi .. | ,, .. | R. Muir (P.) .. | Muir and party, Hikurangi .. | 1½ | ,, .. | 1 | 4′ .. | 4′ .. | ,, .. | 1 T | T. 120′ .. | 1,254 | 1,062 | 2,316 | 1 | 2 | 3 | ,, |
| ,, .. | Sublease, Wilson's Coll., Ltd. .. | J. Cunningham (P.) | Nesbitt and party, Hikurangi .. | ½ | ,, .. | 1 | 4′ .. | 4′ .. | ,, .. | 1 T | T. 120′ .. | 715 | .. | 715 | 1 | 4 | 5 | ,, |
| ,, .. | Ditto .. | G. Windress (P.) .. | Windress and party, Hikurangi .. | ½ | ,, .. | 1 | 2½′ .. | 2½′ .. | ,, .. | 1 T | T. 50′ .. | 395 | .. | 395 | .. | 3 | 3 | ,, |
| Coutts Colliery, Hikurangi .. | Freehold sublease, Hikurangi Coal Co., Ltd. .. | G. Coutts (P.) .. | Coutts and party, Hikurangi .. | 1½ | ,, .. | 1 | 3′ to 8′ | 7′ .. | ,, .. | 1 T | T. 50′ .. | 2,130 | 2,056 | 4,186 | 1 | 3 | 4 | ,, |
| May Colliery, Waro .. .. | Ditto .. | A. Rarity .. | Newby and party, Hikurangi .. | 1¾ | ,, .. | 1 | 3½′ .. | 3½′ .. | ,, .. | 1 T | T. 390′ .. | 736 | 2,929 | 3,665 | .. | 6 | 6 | ,, |
| Laird's Colliery, Waro .. | ,, .. | A. Laird (P.) .. | Laird and party, Hikurangi .. | ½ | ,, .. | 1 | 4′ .. | 4′ .. | ,, .. | 1 T | T. 16′ .. | 461 | .. | 461 | .. | 3 | 3 | ,, |
| Craig's Colliery, Waro .. | ,, .. | R. Craig (P.) .. | Craig and party, Hikurangi .. | ½ | ,, .. | 1 | 2½′ .. | 2½′ .. | ,, .. | 1 T | T. 50′ .. | 132 | .. | 132 | .. | 4 | 4 | ,, |
| Cook's Colliery, Waro .. .. | ,, .. | L. Cook (P.) .. | Cook and party, Hikurangi .. | ½ | ,, .. | 1 | 3′ .. | 3′ .. | ,, .. | 1 T | T. 132′ .. | 260 | .. | 260 | .. | 3 | 3 | ,, |
| Jubilee No. 3 Colliery, Hikurangi | ,, .. | J. Wilson (P.) .. | Wilson and party, Hikurangi .. | 1½ | ,, .. | 1 | 2′ .. | 2′ .. | ,, .. | 1 T | T. 30′ .. | 703 | 62 | 765 | 1 | 2 | 3 | ,, |
| Fearnley's Colliery, Waro .. | ,, .. | H. Fearnley (P.) .. | Fearnley and Rodger, Hikurangi | 1⅜ | ,, .. | 1 | 3½′ to 4′ | 3½′ .. | ,, .. | 1 T | T. 200′ .. | 1,481 | 1,545 | 3,026 | .. | 4 | 4 | ,, |
| Glen Nell Colliery, Hikurangi .. | Crown lease .. | S. G. Foot (U.) .. | Foot and Co., Hikurangi .. | 6 | ,, .. | 1 | 3′ .. | 3′ .. | ,, .. | 1 T | T. 70′ .. | 1,739 | 3,846 | 5,585 | 2 | 3 | 5 | ,, |
| Jackson's Colliery, Hikurangi .. | Sublease, Kerr and White, freehold | W. Jackson (P.) .. | W. Jackson, Hikurangi .. | 9½ | ,, .. | 1 | 10′ .. | 10′ .. | ,, .. | 1 T | T. 40′ .. | 911 | 37,790 | 38,701 | 1 | 2 | 3 | ,, |
| Dunn's Colliery, Hikurangi .. | Crown lease .. | F. J. Dunn (P.) .. | Dunn and Steers, Hikurangi .. | ½ | ,, .. | 1 | 3′ to 7′ | 5′ .. | ,, .. | 1 T | T. 40′ .. | 420 | .. | 420 | .. | 1 | 1 | ,, |
| McInness Colliery, Hikurangi .. | , .. | J. E. Cook (P.) .. | J. R. McInness, Hikurangi .. | ½ | ,, .. | 1 | 3′ .. | 3′ .. | ,, .. | 1 T | T. 198′ .. | 550 | .. | 550 | .. | 4 | 4 | ,, |
| Cherrie's Colliery, Hikurangi .. | ,, .. | R. C. Cherrie .. | Cherrie and party, Hikurangi .. | ½ | ,, .. | 1 | 5′ .. | 5′ .. | ,, .. | 1 T | T. 198′ .. | 177 | .. | 177 | .. | 3 | 3 | ,, |
| New Kiripaka Colliery, Kiripaka | Freehold .. | A. Brown (P.) .. | A. J. Webber, Kiripaka .. | 1½ | ,, .. | 1 | 5′ .. | 5′ .. | ,, .. | 1 T | T. 120′ .. | 298 | 302 | 600 | 2 | 2 | 4 | ,, |
| Glenbervie Colliery, Kiripaka .. | ,, .. | C. J. Doel (P.) .. | C. J. Doel, Whangarei .. .. | 2 | ,, .. | 1 | 5′ .. | 5′ .. | ,, .. | 1 T | T. 200′ .. | 2,124 | 560 | 2,684 | 2 | 4 | 6 | ,, |
| Avoca Colliery, Tangowahine .. | ,, .. | J. Leighton (P.) .. | Burley and party, Hikurangi .. | 1½ | ,, .. | 1 | 8′ .. | 8′ .. | ,, .. | 1 T | T. 130′ .. | 262 | 450 | 712 | 1 | 3 | 4 | ,, |
| *Waikato District.* | | | | | | | | | | | | | | | | | | |
| Rotowaro Colliery, Rotowaro .. | Crown lease and freehold | A. Penman .. | Taupiri Coal-mines, Ltd., Auckland | 13 | Brown .. | 3 | 7′ to 27′ | 7′ to 15′ .. | Bord and pillar | 3 T | T. 4,000′, T. 1,600′ | 143,163 | 1,359,939 | 1,503,102 | 71 | 202 | 273 | 3 fans. |
| Pukemiro Colliery, Pukemiro .. | Freehold .. | A. Burt .. .. | Pukemiro Collieries, Ltd., Auckland | 15 | ,, .. | 1 | 4′ to 18′ | 4′ to 14′ .. | Ditto .. | 3 T | T. 5,000′, T. 2,200′ | 127,205 | 1,759,503 | 1,886,708 | 63 | 194 | 257 | 2 fans. |
| Waipa Colliery, Glen Massey .. | ,, .. | T. Thomson .. | Waipa Railway and Collieries, Ltd., Wellington | 17 | ,, .. | 1 | 5′ to 8′ | 5′ to 7′ .. | ,, .. | 1 T | T. 4,000′ .. | 33,071 | 1,038,275 | 1,071,346 | 27 | 80 | 107 | Sirocco fan. |
| Wilton's Colliery, Glen Massey .. | ,, .. | J. R. Watson .. | Wilton Collieries, Ltd., Glen Massey | ⅛ | ,, .. | 1 | 6′ to 8′ | 5′ to 7′ .. | ,, .. | 1 T | T. 460′ .. | 4,309 | .. | 4,309 | 7 | 12 | 19 | ,, |
| Waikato Extended Colliery, Huntly | ,, .. | J. Connelly .. | Roose Shipping Co., Ltd., Mercer | 14 | ,, .. | 1 | 16′ .. | 14′ .. | ,, .. | 1 T | T. 4,800′ .. | 5,093 | 80,257 | 85,350 | 2 | 7 | 9 | Fan. |
| Glen Afton Colliery, Glen Afton | Crown lease and freehold | P. Hunter .. | Glen Afton Collieries, Ltd., Auckland | 10 | ,, .. | 1 | 4′ to 16′ | 4′ to 12′ .. | ,, .. | 1 T | T. 4,800′ .. | 177,244 | 1,003,129 | 1,180,373 | 80 | 281 | 361 | Sirocco fan. |
| Pukemiro Jn. Colliery, Pukemiro | Crown lease .. | R. L. Godden .. | Clare and partners, Pukemiro Jn. | 10 | ,, .. | 1 | 2′ to 25′ | 2′ to 16′ .. | ,, | 2 T | T. 100′, T. 70′ | 11,053 | 94,771 | 105,824 | 6 | 9 | 15 | Natural. |
| Taupiri East Colliery, Kimihia .. | Auckland University lease | J. Holland (P.) .. | Holland and party, Huntly .. | 9 | ,, .. | 1 | 10′ to 18′ | 6′ to 13′ .. | ,, .. | 1 T | T. 390′ .. | 2,024 | 10,765 | 12,789 | 1 | 4 | 5 | ,, |
| Campbell Colliery, Whatawhata | Crown lease .. | R. Fox .. .. | Campbell Coal Co., Ltd., Hamilton | 9 | ,, .. | 1 | 12′ .. | 9′ .. | ,, .. | 1 T | T. 300′ .. | 5,225 | 22,745 | 27,970 | 3 | 6 | 9 | ,, |
| Renown Colliery, Renown .. | Freehold .. | T. L. Andrews .. | Renown Collieries, Ltd., Auckland | 2½ | ,, .. | 1 | 15′ .. | 7½′ to 9′ .. | ,, .. | 1 T | T. 1,950′ .. | 88,790 | 99,090 | 187,880 | 45 | 134 | 179 | Fan. |
| Graham's Colliery, Glen Afton .. | ,, .. | M. J. Tansey .. | Graham Coal Co., Pukemiro .. | 7 | ,, .. | 1 | 6½′ .. | 6′ .. | ,, .. | 1 T | T. 1,900′ .. | 12,683 | 67,628 | 80,311 | 4 | 16 | 20 | Natural. |
| Rangitoto Colliery, Te Kuiti .. | Native lease .. | J. Chevins (P.) .. | Morgan and party, Te Kuiti .. | 4 | ,, .. | 1 | 7′ .. | 6′ .. | ,, .. | 1 T | T. 600′ .. | 280 | 404 | 684 | .. | 2 | 2 | ,, |
| Okoko Colliery, Te Rawamoa .. | Crown lease .. | H. J. Fox .. | H. J. Fox, Auckland .. .. | ½ | ,, .. | 1 | 7′ .. | 7′ .. | ,, .. | .. | .. | 20 | .. | 20 | .. | 1 | 1 | ,, |
| *Taranaki District.* | | | | | | | | | | | | | | | | | | |
| Paparata Colliery, Tatu .. | Crown lease .. | J. C. Griffen .. | Taranaki Coal Mining Co., Ltd., Stratford | 3 | Brown .. | 1 | 3½′ .. | 3′ .. | Bord and plliar | 1 T | T. 70′ .. | 1,119 | 422 | 1,541 | 1 | 4 | 5 | Natural. |
| Egmont Colliery, Tangarakau .. | ,, .. | A. Whittleston .. | Egmont Collieries, Ltd., Stratford | 4 | ,, .. | 1 | 5′ .. | 5′ .. | Ditto .. | 1 T | T. 314′ .. | 13,544 | 2,753 | 16,297 | 17 | 33 | 50 | ,, |
| Old Stockman Colliery, Mokau .. | Freehold .. | C. Wright (P.) .. | Chambers' Bros., Awakino .. | 10 | ,, .. | 1 | 4½′ .. | 4½′ .. | ,, .. | 1 T | T. 400′ .. | 497 | 3,344 | 3,841 | .. | 2 | 2 | ,, |
| Tatu Colliery, Tatu .. .. | ,, .. | E. Johnson .. | Gilberd and party, Tatu, Ohura | 1 m. | ,, .. | 1 | 6½′ .. | 5½′ .. | ,, .. | 1 T | T. 100′ .. | 81 | .. | 81 | 3 | 1 | 4 | ,, |
| Output of collieries included in previous statements at which operations are abandoned or suspended .. .. | | | | | .. | | .. | .. | .. | .. | .. | .. | 9,407,744 | 9,407,744 | .. | .. | .. | .. |

## COLLIERY STATISTICS, 1930—*continued.*

| Name of Mine and Locality. | Title held (Crown Lease or otherwise). | Name of Mine-manager. | Name and Address of Owner. | Number of Years worked. | Classification of Coal. | Number of Seams worked. | Thickness of Coal-seam. | Thickness worked. | System of Underground Working. | Number of Winding-shafts. | Depth of Shaft or Length of Tunnel. | Total Output for 1930. | Total Output to 31st December, 1929. | Total Output to 31st December, 1930. | Number of Persons ordinarily employed. | | | Means of Ventilation. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Above. | Below. | Total. | |
| **WEST COAST INSPECTION DISTRICT.** | | | | | | | | | | | | | | | | | | |
| *Nelson District.* | | | | | | | | | | | | Tons. | Tons. | Tons. | | | | |
| Puponga | Crown lease | A. Thompson | Puponga Coal Co., Ltd., Puponga | 27 | Bituminous | 1 | 3′ to 6′ | 6′ | Bord and pillar | | T. 30 ch. | 15,546 | 285,642 | 301,188 | 10 | 29 | 39 | Natural. |
| Motupipi | ,, | D. Winter | J. and D. E. Winter, Motupipi | 3 | Lignite | 2 | 3′ | 3′ | Ditto | | T. 3 ch. | 200 | 498 | 698 | 1 | .. | 1 | ,, |
| Baton | ,, | C. Curtis | Baton Co-op. Coal Pty., Tapawera | 2 | Bituminous | 1 | 4′ | 4′ | ,, | | T. 3½ ch. | 380 | 112 | 492 | .. | 2 | 2 | ,, |
| O'Rourke's | Freehold | A. O'Rourke | A. O'Rourke, Longford | 11 | Lignite | 1 | 3′ | 3′ | ,, | | T. 10 ch. | 80 | 1,231 | 1,311 | .. | 1 | 1 | ,, |
| Seymour's | Crown prospecting license | J. W. Smith | Owen Collieries, Ltd., Nelson | 1 | Bituminous | 1 | 6′ | 6′ | Panel | | T. 12 ch. | 1,178 | .. | 1,178 | .. | 2 | 2 | ,, |
| *Buller District.* | | | | | | | | | | | | | | | | | | |
| Allan's | Crown lease | T. D. Allan | T. D. Allan, Charleston | 2 | Lignite | 1 | 42′ | 10′ | Opencast | | | 20 | 8 | 28 | 1 | .. | 1 | Natural. |
| Cardiff Bridge | ,, | M. Forsyth | Cardiff Bridge Co-op. Pty., Westport | 10 | Bituminous | 1 | 5′ to 25′ | 25′ | Bord and pillar | | | 24,844 | 165,436 | 190,280 | 6 | 22 | 28 | ,, |
| Cascade | ,, | H. McAvoy | Cascade-Westport Coal Co., Ltd., Westport | 4 | ,, | 1 | 20′ | 15′ | Ditto | | | 17,653 | 30,278 | 47,931 | 7 | 16 | 23 | ,, |
| Charming Creek | ,, | C. D. Buist | Charming Creek-Westport Coal Co., Ltd., Westport | 3 | ,, | 1 | 5′ to 14′ | 10′ | ,, | | T. 12 ch. | 9,324 | 710 | 10,034 | 15 | 26 | 41 | Fan. |
| Chester's | ,, | R. Chester | Penberth and Chester, Seddonville | 11 | ,, | 1 | 2′ 6″ to 3′ | 3′ | ,, | | T. 15 ch. | 2,888 | 17,007 | 19,895 | 1 | 4 | 5 | Natural. |
| Coal Creek | ,, | W. McGuire | McGuire and party, Seddonville | 15 | ,, | 1 | 5′ to 25′ | 8′ | ,, | | | 11,926 | 85,383 | 97,309 | 2 | 17 | 19 | ,, |
| Glasgow | ,, | D. Q. O'Brien | Glasgow Co-op. mining party, Seddonville | 6 | ,, | 1 | 6′ to 12′ | 7′ | ,, | | T. 8 ch. | 3,242 | 28,762 | 32,004 | 4 | 6 | 10 | ,, |
| Mitchell's | ,, | F. T. Mitchell | F. T. Mitchell, Charleston | 7 | Lignite | 1 | 3′ | 3′ | Opencast | | | 49 | 177 | 226 | 1 | .. | 1 | ,, |
| Powell's | ,, | J. H. Powell | J. H. Powell, Charleston | 2 | ,, | | | | ,, | | | 21 | 10 | 31 | 1 | .. | 1 | ,, |
| Quinn's | ,, | T. Quinn | Quinn and party, Seddonville | 7 | Bituminous | 1 | 5′ | 5′ | Bord and pillar | | | 1,184 | 6,753 | 7,987 | 1 | 3 | 4 | ,, |
| St. Helens | ,, | J. T. Dove | Roger Bros., St. Helens | 1 | ,, | 1 | 8′ | 8′ | Ditto | | T. 1½ ch. | 150 | .. | 150 | 3 | 1 | 4 | ,, |
| Warne's | ,, | G. N. Warne | G. N. Warne, Charleston | .. | Lignite | 1 | 6′ | 6′ | ,, | | | 15 | 37 | 52 | 1 | .. | 1 | ,, |
| Denniston | ,, | G. Smith and J. McArthur | Westport Coal Co., Ltd., Dunedin | 50 | Bituminous | .. | 3′ to 30′ | Full | Panel and bord and pillar | | T's. 410 ch. | 187,165 | 9,785,949 | 9,973,114 | 157 | 365 | 522 | Fans. |
| Millerton | ,, | A. Smith and W. Lowden | ,, | 39 | ,, | 1 | 4′ to 40′ | 12′ | Bord and pillar | 1 | T's. 298 ch. | 168,185 | 7,903,371 | 8,071,556 | 70 | 380 | 450 | ,, |
| Westportmain | ,, | H. Brady | Westport-Granity Coal-mines, Ltd., Westport | 6 | ,, | 1 | 10′ | 10′ | Ditto | | | 29,272 | 128,068 | 157,340 | 14 | 29 | 43 | Natural. |
| Westport-Mokihinui | ,, | P. Bird | McIntosh and Willman, Seddonville | 10 | ,, | 1 | 4′ to 5′ | 5′ | ,, | | | 3,310 | 37,291 | 40,601 | .. | 5 | 5 | ,, |
| Stateville | ,, | R. M. Mulholland | Westport-Stateville Co-op. coal party, Westport | 6 | ,, | 1 | 10′ | 10′ | ,, | | | 3,110 | 9,944 | 13,054 | 2 | 5 | 7 | Fan. |
| Stockton | ,, | T. McGhie | Westport-Stockton Coal Co., Ltd., Christchurch | 22 | ,, | 3 | 4′ to 20′ | 10′ | ,, | | | 152,600 | 2,642,442 | 2,795,042 | 113 | 198 | 311 | Fans. |
| Wynn's | ,, | G. Wynn | G. Wynn, Seddonville | 7 | ,, | 1 | 3′ | 3′ | ,, | | T. 3 ch. | 796 | 5,188 | 5,984 | .. | 2 | 2 | Natural. |
| Rockland | ,, | J. P. Burley | J. P. Burley, Berlins | 28 | Brown | 1 | 27′ | 8′ | ,, | | | 235 | 9,864 | 10,099 | .. | 2 | 2 | ,, |
| Whitecliff | ,, | J. H. Burley | James H. Burley, Berlins | 8 | ,, | 1 | 18′ | 10′ | ,, | | T. 12 ch. | 680 | 1,847 | 2,527 | .. | 2 | 2 | ,, |
| Woodpecker Bay | Freehold | T. Price | Price Bros., Tiromoana | 2 | Lignite | 1 | | | ,, | | | 12 | 432 | 444 | .. | 1 | 1 | ,, |
| *Reefton District.* | | | | | | | | | | | | | | | | | | |
| Archer's | Crown lease and freehold | F. W. Archer | F. W. Archer, Capleston | 35 | Brown | 4 | 6′ to 18′ | Full | Bord and pillar | | T. 10 ch. | 3,610 | 39,628 | 43,238 | 2 | 6 | 8 | Natural. |
| Clele | Crown lease | James Banks | V. W. Alborn, Reefton | 44 | ,, | 2 | 5′ and 6′ | ,, | Ditto | | | 4,247 | 39,034 | 43,281 | 2 | 3 | 5 | ,, |
| Coghlan's | Freehold | T. Coghlan | John Coghlan, Reefton | 33 | ,, | 1 | 12′ | 9′ | ,, | | T. 14 ch. | 1,551 | 17,011 | 18,562 | .. | 3 | 3 | ,, |
| Coghlan's | Crown lease | ,, | ,, | 4 | ,, | 1 | 12′ | 9′ | ,, | | | 689 | 3,224 | 3,913 | | | | |
| Collins | ,, | N. Collins | N. Collins, Reefton | 38 | ,, | 1 | 7′ | 7′ | ,, | | | 527 | 58,302 | 58,829 | 1 | 1 | 2 | ,, |
| Terrace | ,, | C. Svenson | W. Blackadder, Reefton | 10 | ,, | 1 | 6′ | 6′ | ,, | | | 956 | 4,889 | 5,845 | .. | 3 | 3 | ,, |
| Burke's Creek | ,, | W. Parsonage | Burke's Creek Collieries, Ltd., Wellington | 29 | ,, | 2 | 6′ to 10′ | 8′ | ,, | 1 | S. 10 ch. | 9,036 | 181,187 | 190,223 | 14 | 30 | 44 | Fans. |
| Times Street | ,, | H. A. Honey | H. A. Honey, Reefton | 2 | ,, | 1 | 40′ | 8′ | ,, | | | 1,109 | 408 | 1,517 | .. | 3 | 3 | Natural. |
| Defiance | ,, | D. McLaughlin | D. McLaughlin, Reefton | 3 | ,, | 1 | 4′ | 4′ | ,, | | T. 3 ch. | 546 | 1,644 | 2,190 | .. | 2 | 2 | ,, |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Morrisvale | Crown lease | E. Nelson and H. Talbot | Morrisvale Coal Co., Reefton | 18 | Brown | 3 | 6′ to 12′ | 8′ | Panel and bord and pillar | 1 | T. 23 ch. | 17,490 | 71,121 | 88,611 | 23 | 25 | 48 | Natural. |
| White Rose | " | W. Osborn | W. Osborn, Merrijigs | 7 | " | 1 | 4′ | 4′ | Bord and pillar | | T. 2 ch. | 32 | 137 | 169 | .. | 1 | 1 | " |
| Golden Point | " | W. Harris | T. S. Patterson, Reefton | 17 | " | 1 | 9′ | 9′ | Ditto | 1 | T. 6 ch. | 582 | 16,230 | 16,812 | 1 | 3 | 4 | " |
| Waitahu | " | A. D. Williams | A. D. Williams, Reefton | 21 | " | 1 | 5′ | 5′ | " | | T. 5 ch. | 494 | 5,675 | 6,169 | 1 | 2 | 3 | " |
| Wealth of Nations | " | James Bolitho | Wealth of Nations, Ltd., Reefton | 19 | " | 1 | 10′ | 10′ | " | | T. 3 ch. | 1,926 | 26,611 | 28,537 | .. | 4 | 4 | " |
| *Greymouth District.* | | | | | | | | | | | | | | | | | | |
| Baddeley's | State Reserve | J. Rowse | Baddeley and party, Runanga | 10 | Sub-bituminous | 1 | 5′ | 5′ | Bord and pillar | | | 5,153 | 32,497 | 37,650 | 1 | 8 | 9 | Fans. |
| Bell Bird | " | F. Fauth | Fauth and party, Greymouth | 3 | Ditto | 1 | 9′ | 9′ | Ditto | | | 4,517 | 4,052 | 8,569 | 1 | 4 | 5 | Natural. |
| Bellvue | " | W. Brown | The Bellvue Co-op. party, Greymouth | 4 | " | 1 | 5′ 6″ | Full | " | | | 10,403 | 17,112 | 27,515 | 1 | 14 | 15 | " |
| Blackball | Freehold | J. G. Quinn | Blackball Coal-mines Pty., Ltd., Christchurch | 39 | " | 2 | 17′ | 15′ | " | 2 | T. 28½ ch. | 96,076 | 3,801,351 | 3,897,427 | 56 | 245 | 301 | Fan. |
| Brae Head | State Reserve | J. Watson | Boote and party, Dunollie | 10 | " | 1 | 9′ | 9′ | " | 1 | T. 10 ch. | 9,414 | 43,560 | 52,974 | 6 | 7 | 13 | Natural. |
| Briandale | Crown lease | T. Howard | Briandale Collieries, Ltd., Christchurch | 4 | " | 1 | 3′ 10″ | Full | " | | | 19,432 | 23,776 | 43,208 | 13 | 42 | 55 | Fan. |
| Wallsend | " | G. Smith | Brunner Collieries, Ltd., Wellington | 7 | Bituminous | 1 | 18′ | 8′ | " | 2 | T. 10 ch. | 62,573 | 252,426 | 314,999 | 36 | 125 | 161 | " |
| Boustridge's | " | T. H. Boustridge | T. H. Boustridge, Greymouth | 3 | " | 1 | 2′ | 2′ | " | | T. ½ ch. | 8 | 355 | 363 | 1 | 1 | 2 | Natural. |
| Cain's | State Reserve | E. Cain | J. and E. Cain, Rapahoe | 6 | Sub-bituminous | 1 | 4′ to 6′ | Full | " | | T. 7 ch. | 770 | 2,691 | 3,461 | 1 | 2 | 3 | " |
| Castlepoint | " | S. Hewison | Castlepoint Co-op. party, Runanga | 4 | Bituminous | 1 | 5′ | 5′ | " | | T. 14 ch. | 10,705 | 19,037 | 29,742 | 2 | 18 | 20 | Fan. |
| Cox's Creek | Crown lease | J. R. Brown | T. E. Coates, Greymouth | 4 | " | 1 | 3′ to 4′ | 4′ | " | 1 | T. 6 ch. | 836 | 1,303 | 2,139 | .. | 4 | 4 | Natural. |
| Duggan's | State Reserve | W. Richmond | Duggan and party, Rewanui | 9 | " | 1 | 5′ 6″ | 4′ | " | 1 | T. 10 ch. | 4,783 | 32,443 | 37,226 | 1 | 7 | 8 | " |
| Gold Light | " | J. Kelly | Williams and party, Runanga | 3 | Sub-bituminous | 1 | 7′ | 7′ | " | | | 10,388 | 8,877 | 19,265 | 1 | 10 | 11 | Fan. |
| Fiery Cross | " | T. H. Currie | Currie and party, Dunollie | 2 | Ditto | 1 | 6′ | 6′ | " | | T. 6 ch. | 4,190 | 2,970 | 7,160 | 1 | 7 | 8 | Natural. |
| Dobson | Crown lease | C. Hunter | Grey Valley Collieries, Ltd., Christchurch | 8 | Bituminous | 1 | 9′ to 16′ | 9′ | Panel and bord and pillar | 1 | T. 18 ch. | 117,386 | 328,152 | 445,538 | 50 | 261 | 311 | Fans. |
| Hunter's | State Reserve | J. Neilson | Hunter and party, Greymouth | 10 | Sub-bituminous | 1 | 6′ | 6′ | Bord and pillar | | | 5,545 | 32,665 | 38,210 | 1 | 9 | 10 | Fan. |
| Jubilee | " | W. Wallwork | Grey-Jubilee Co-op. party, Christchurch | 3 | Ditto | 1 | 4′ 6″ | Full | Ditto | | | 3,808 | 6,101 | 9,909 | 1 | 3 | 4 | Natural. |
| Leitch's | Crown lease | J. Scott | J. R. Leitch, Greymouth | 3 | " | 1 | 4′ 6″ | " | " | | T. 5 ch. | 59 | 219 | 278 | 1 | 1 | 2 | " |
| Moody Creek | State Reserve | A. Cain | Moody Creek Co-op. party, Runanga | 8 | Sub-bituminous | 1 | 5′ | 5′ | " | | T. 5 ch. | 6,474 | 31,376 | 37,850 | 3 | 7 | 10 | Fan. |
| New Point Elizabeth | " | P. Manderson | New Point Elizabeth Co-op. party, Greymouth | 4 | Ditto | 1 | 10′ | 8′ | " | | T. 10 ch. | 12,050 | 13,192 | 25,242 | 3 | 9 | 12 | " |
| Old Runanga | " | E. Kennedy | Old Runanga Co-op. party, Runanga | 4 | Bituminous | 1 | 5′ | 5′ | " | | T. 10 ch. | 5,676 | 15,045 | 20,721 | 3 | 8 | 11 | Natural. |
| Paparoa | Crown lease | A. O'Donnell | Paparoa Coal Co., Ltd., Wellington | 22 | Semi-bituminous | 2 | 5′ to 25′ | Full | " | | T. 48½ ch. | 28,150 | 624,845 | 652,995 | 9 | 27 | 36 | Fan. |
| Tyneside | " | W. Parsonage | Tyneside Collieries, Ltd., Christchurch | .. | Bituminous | 1 | 12′ | " | " | | T. 5 ch. | 1,213 | .. | 1,213 | .. | 8 | 8 | " |
| Liverpool | State Reserve | T. King | N.Z. Government, Wellington | 18 | " | 5 | 6′ to 34′ | " | " | | T. 74 ch. | 132,550 | 2,031,397 | 2,163,947 | 94 | 240 | 334 | Fans. |
| James | " | J. Armstrong | " " | 8 | Sub-bituminous | 1 | 4′ to 8′ | " | " | | T. 15 ch. | 42,284 | 227,137 | 269,421 | 19 | 60 | 79 | " |
| Schultz Creek | Crown lease | M. Fowler | Marshall and party, Rapahoe | 6 | Ditto | 1 | 4′ | " | " | | | 5,776 | 10,295 | 16,071 | 1 | 9 | 10 | Fan. |
| Smith's | State Reserve | T. Heyes | Smith and party, Dunollie | 19 | " | 1 | 5′ to 7′ | " | " | | T. 10 ch. | 5,452 | 42,222 | 47,674 | 3 | 10 | 13 | " |
| Spark's | " | J. Unwin | Spark and party, Rewanui | 9 | Bituminous | 1 | 7′ | " | " | | T. 1 ch. | 3,540 | 27,266 | 30,806 | 3 | 4 | 7 | " |
| Output of collieries included in previous statements at which operations are abandoned or suspended | | | | | | | | | | | | .. | 7,394,064 | 7,394,064 | .. | .. | .. | |
| *Canterbury District.* | | | SOUTHERN INSPECTION DISTRICT. | | | | | | | | | | | | | | | |
| Homebush, Glentunnel | Freehold | J. Campbell (D.) | Homebush Brick and Tile Co., Ltd., Glentunnel | 57 | Brown | 1 | 5′ 6″ | 5′ 6″ | Bord and pillar | | T. 420′ | 1,844 | 354,740 | 356,584 | 1 | 4 | 5 | Natural. |
| Bush Gully, Coalgate | " | Jas. Charles (P.) | J. Dean's estate, Coalgate | 13 | " | 1 | 4′ | All | Ditto | | T. 130′ | 399 | 41,263 | 41,662 | 1 | 2 | 3 | " |
| Steventon Valley, Whitecliffs | Crown lease | J. T. Leeming (D.) | Leeming Bros., Glentunnel | 5 | " | 1 | 7′ | 6′ | " | | T. 132′ | 52 | 2,623 | 2,675 | .. | 1 | 1 | " |
| Clearview, Glenroy | Freehold | Geo. Aitken (D.) | Clearview Coal Co., Ltd., Glenroy | 11 | " | 1 | 10½′ | 9½′ | " | | | 2,763 | 18,782 | 21,545 | 1 | 3 | 4 | " |
| Tripps, Mount Somers | " | M. Menaglio (P.) | Mount Somers Coal Co., Ltd., Mount Somers | 64 | " | 3 | 10′ to 20′ | 8′ | " | | T. 360′ | 1,416 | 86,475 | 87,891 | .. | 3 | 3 | " |
| Klondyke, Bush Gully | Freehold | W. J. Smith (P.) | W. J. Smith, Whitecliffs | 2 | " | 1 | 16′ | 10′ | " | | T. 700′ | 1,450 | 141 | 1,591 | 1 | 3 | 4 | " |
| Springfield | " | J. Taylor, sen. (D.) | J. Taylor, Springfield | 47 | " | 1 | 1′ 10″ | All | " | | T. 150′ | 46 | 92,836 | 92,882 | 1 | 1 | 2 | " |
| Blackburn, Mount Somers | Crown lease | T. Harris (D.) | Blackburn Coal Co., Ltd., Mount Somers | 1 | " | 1 | 10′ | 7′ | " | | T. 132′ | 9 | .. | 9 | .. | .. | .. | " |
| Sheffield | Freehold | Jas. McQueen (P.) | McQueen Bros., Sheffield | 1 | " | 1 | 3′ | All | " | | T. 90′ | 8 | .. | 8 | .. | .. | .. | " |

## COLLIERY STATISTICS, 1930—*continued.*

| Name of Mine and Locality. | Title held (Crown Lease or otherwise). | Name of Mine-manager. | Name and Address of Owner. | Number of Years worked. | Classification of Coal. | Number of Seams worked. | Thickness of Coal-seams. | Thickness worked. | System of Underground Working. | Number of Winding-shafts. | Depth of Shaft or Length of Tunnel. | Total Output for 1930. | Total Output to 31st December, 1929. | Total Output to 31st December, 1930. | Number of Persons ordinarily employed. | | | Means of Ventilation. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Above. | Below. | Total. | |
| **SOUTHERN INSPECTION DISTRICT—*continued.*** | | | | | | | | | | | | Tons. | Tons. | Tons. | | | | |
| Albury, Albury | Crown lease under Land for Settlements Act | J. H. Smillie (D.) | J. H. Smillie, Albury | 37 | Lignite | 1 | 26′ | 8½′ | Bord and pillar | | T. 330′ | 583 | 27,073 | 27,656 | .. | 1 | 1 | Natural. |
| Woodbank, Albury | Crown lease under Lands Act | J. H. Smillie (D.) | Duncan Ross, Albury | 6 | ,, | 1 | 26′ | 8½′ | Ditto | | T. 530′ | 634 | 2,858 | 3,492 | .. | 2 | 2 | ,, |
| *North Otago District.* | | | | | | | | | | | | | | | | | | |
| St. Andrews, Papakaio | Freehold | T. Nimmo, jun. (U.) | Duncan Cameron, Papakaio | 51 | Lignite | 1 | 6′ 9″ | 6′ | Bord and pillar | | T. 198′ | 2,322 | 64,587 | 66,909 | 1 | 3 | 4 | Natural. |
| Airedale, Papakaio | Crown lease | A. Beardsmore (P.) | A. Beardsmore and Son, Papakaio | 4 | ,, | 1 | 7′ to 12′ | 6′ to 7′ | Ditto | | .. | 1,243 | 2,579 | 3,822 | 1 | 2 | 3 | ,, |
| Ngapara, Ngapara | Freehold | Wm. Nimmo (U.) | Wm. Nimmo, Ngapara | 52 | ,, | 1 | 25′ | 8′ to 10′ | ,, | | T. 50′ | 872 | 44,296 | 45,168 | 1 | 2 | 3 | Fan. |
| Shag Point (old mine), Shag Point | Crown lease | W. McLaren (P.) | Bruce Railway and Coal Co., Dunedin | 16 | Brown | 1 | 5′ | All | ,, | | T. 450′ | 1,570 | 418,765 | 420,335 | 1 | 3 | 4 | Natural. |
| Shag Point Coal-mining Co., Shag Point | Freehold | A. S. Gillanders (1st C.) | Shag Point Coal-mining Co., Dunedin | 22 | ,, | 1 | 3′ to 3½′ | ,, | ,, | | T. 500′ | 21,464 | 263,160 | 284,624 | 10 | 50 | 60 | Fan. |
| *Central Otago District.* | | | | | | | | | | | | | | | | | | |
| Rough Ridge, Oturehua | Crown lease | E. Beck (P.) | Margaret Beck, Oturehua | 43 | Lignite | 1 | 20′ | All | Opencast | | .. | 28 | 35,649 | 35,677 | .. | .. | .. | Open cast. |
| Idaburn, Oturehua | Freehold | C. L. Fisher (P.) | C. L. Fisher, Oturehua | 60 | ,, | 1 | 20′ | ,, | ,, | | .. | 595 | 54,147 | 54,742 | 2 | .. | 2 | ,, |
| Oturehua, Oturehua | Crown lease | A. Brown (P.) | Becker Bros., Oturehua | 36 | ,, | 1 | 20′ | ,, | ,, | | .. | 737 | 5,694 | 6,431 | 1 | .. | 1 | ,, |
| Cambrian, Cambrian | ,, | O. Jones (P.) | Vinegar Hill Hydraulic Sluicing Co., Ltd., St. Bathan's | 69 | ,, | 1 | 18′ | ,, | ,, | | .. | 370 | 52,086 | 52,456 | 2 | .. | 2 | ,, |
| Coal Creek Flat | ,, | N. Harliwich (P.) | N. Harliwich, Coal Creek Flat | 60 | ,, | 1 | 26′ | 12′ | ,, | | .. | 2,038 | 95,828 | 97,866 | 2 | .. | 2 | ,, |
| Bannockburn, Bannockburn | ,, | J. Hodson, jun. (2nd C.) | J. Hodson, Bannockburn | 53 | ,, | 1 | 6′ to 20′ | 9′ | Bord and pillar | | T. 120′ | 1,902 | 122,347 | 124,249 | 1 | 2 | 3 | Natural. |
| Nevis Crossing, Nevis | ,, | R. Ritchie (P.) | Robt. Ritchie, Nevis | 27 | Brown | 1 | 60′ | 60′ | Opencast | | .. | 52 | 18,164 | 18,216 | 2 | .. | 2 | Open. |
| Parfit's, Upper Idaburn | ,, | Isaac Parfit | Parfit and Marslin, Naseby | 5 | Lignite | 1 | 30′ | 30′ | ,, | | .. | 60 | 635 | 695 | 1 | .. | 1 | ,, |
| *South Otago District.* | | | | | | | | | | | | | | | | | | |
| Freeman's, Abbotsford | Freehold | W. Evans (U.) | Freeman's Coal Co., Ltd., Green Island | 50 | Lignite | 1 | 12′ to 15′ | All | Bord and pillar | | .. | 4,754 | 613,545 | 618,299 | 2 | 5 | 7 | Natural. |
| Jubilee, Fairfield | ,, | J. Hadcroft (1st C.) | Jubilee Coal, Co., Ltd., Dunedin | 33 | ,, | 1 | 5′ to 9′ | 4′ to 6′ | Ditto | | T. 1,782′ | 17,826 | 545,698 | 563,524 | 6 | 24 | 30 | Fan. |
| Jubilee (under roads) | Crown lease | ,, | ,, | .. | ,, | .. | .. | .. | .. | | .. | .. | .. | .. | .. | .. | .. | .. |
| Willowbank, Riccarton | Freehold | W. Robertson (U.) | Geo. Scurr and Co., Ltd., Mosgiel Junction | 10 | ,, | 1 | 12′ | 6′ | Bord and pillar | | T. 594′ | 3,994 | 29,719 | 33,713 | 1 | 6 | 7 | ,, |
| Auchmeddon, Fairfield | ,, | H. Orr (2nd C.) | H. Orr, Fairfield | 5 | ,, | 1 | 4′ | 4′ | Opencast | | .. | 8 | 49 | 57 | .. | .. | .. | Open. |
| Saddle Hill | ,, | P. Magee (P.) | G. McMaster, Fairfield | .. | ,, | 1 | 5′ | 5′ | ,, | | .. | 236 | .. | 236 | 1 | .. | 1 | ,, |
| Brighton, Brighton | ,, | N. McColl (P.) | N. McColl, Brighton | 15 | ,, | 1 | 5′ | 5′ | Bord and pillar | | T. 198′ | 161 | 9,314 | 9,485 | .. | 1 | 1 | Natural. |
| Brighton (under roads) | Crown lease | ,, | ,, | .. | ,, | .. | .. | .. | .. | | .. | 10 | | | | | | |
| Waronui, Milton | Freehold | J. Carruthers, jun. (1st C.) | Bruce Railway and Coal Co., Ltd., Dunedin | 26 | ,, | 1 | 5′ to 9′ | 5′ to 7′ | Bord and pillar | | T. 950′ | 5,982 | 375,469 | 381,451 | 7 | 15 | 22 | Fan. |
| Taratu, Lovell's Flat | ,, | A. Morris (1st C.) | Sargood and Cheeseman, Dunedin | 29 | ,, | 1 | 25′ to 40′ | 7′ to 30′ | Ditto | | T. 205′, 180′, and 924′ | 17,326 | 701,623 | 718,949 | 12 | 21 | 33 | ,, |
| Lakeside (late Tuakitoto) | ,, | J. Throp | J. Throp, Kaitangata | 20 | ,, | 1 | 10′ | 7′ | ,, | | T. 150′ | 1,292 | 7,763 | 9,055 | 1 | 1 | 2 | ,, |
| Wangaloa, Kaibrook, Kaitangata | Crown lease | W. Barclay (D.) | Wm. Barclay, Kaitangata | 8 | ,, | 1 | 12′ | 6½′ | ,, | | T. 99′ | 1,006 | 1,581<br>2,844 | 2,587<br>2,844 | 1 | 2 | 3 | Natural. |
| Kaidale, Kaitangata | ,, | J. Ramsden (U.) | J. Ramsden, Kaitangata | 11 | ,, | 1 | 10′ | 6½′ | ,, | | T. 260′ | 23 | 9,652 | 9,675 | .. | .. | .. | ,, |
| Kaitangata No. 1, Kaitangata | Freehold | F. Carson (1st C.) | Kaitangata Coal Co., Ltd., Kaitangata | 54 | Brown | 2 | 5′ and 25′ | All | ,, | | T. 1,188′, T. 4,620′ | 101,672 | 4,690,364 | 4,792,036 | 42 | 207 | 249 | Fans. |
| Kaitangata No. 2, Kaitangata | ,, | W. Carson (1st C.) | | 18 | ,, | 2 | 8′ | ,, | ,, | | T. 1,386′, T. 957′ | | | | | | | |
| Kaitangata (under roads) | Crown lease | | | | | | | | | | T. 1,155′, T. 1,320′ | | | | | | | |
| Castle Hill, Kaitangata | Freehold | | | 37 | ,, | 3 | 12′ to 20′ | ,, | ,, | | T. 3,300′ | | | | | | | |
| Benhar, Benhar | ,, | J. Walls (2nd C.) | McSkimming and Son, Ltd., Benhar | 67 | Lignite | 3 | 14′ | 10′ | ,, | | T. 800′ | 7,194 | 280,574 | 287,768 | 1 | 6 | 7 | Fan. |
| Elliotvale, Moneymore | ,, | J. M. Robertson (P.) | W. Cockburn, Milton | 1 | ,, | 1 | 30′ | 6′ to 8′ | ,, | | T. 90′ | 965 | 83 | 1,048 | 1 | 2 | 3 | Natural. |
| Boyd's Burnweil, Lovell's Flat | ,, | Jas. Reid (P.) | Jas. Reid, Milton | 1½ | ,, | 1 | 20′ | 11′ | ,, | | T. 132′ | 100 | 545 | 645 | .. | 1 | 1 | ,, |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Southland District.* | | | | | | | | | | | | | | | | | | | |
| Green's, Gore | Freehold | F. Barclay (2nd C.) | Ex estate late T. Green, Gore | 42 | Lignit | 1 | 19′ | 10′ | Bord and pillar | T. 891′ | 8,727 | 354,476 | 363,203 | 3 | 6 | 9 | Fan. |
| Glenlee, Waikaka | | F. W. Edge (P.) | A. A. Edge, Waikaka | 37 | ,, | 1 | 14′ | 7′ | Ditto | | 1,224 | 32,428 | 33,652 | .. | 2 | 2 | Natural. |
| Ramsay's, North Chatton | Freehold | P. Ramsay (P.) | P. Ramsay, Waikaka | 27 | ,, | 1 | 12′ | 12′ | Opencast | | 98 | 107,945 | 108,043 | 1 | .. | 1 | Open. |
| Landslip, Waikaia | Crown lease | T. Northcoat (P.) | T. Northcoat and Lahey, Waikaia | 31 | ,, | 1 | 3′ to 10′ | All | ,, | | 141 | 37,438 | 37,579 | 1 | .. | 1 | ,, |
| McIver's, Waikaia | ,, | R. McIver (P.) | R. McIver, Waikaia | 7 | ,, | 1 | 5′ to 7′ | 6′ | ,, | | 171 | 1,104 | 1,275 | 1 | .. | 1 | ,, |
| Argyle, Waikaia | ,, | T. Woodward (P.) | Thos. Woodward, Waikaia | 39 | ,, | 1 | 12′ | 12′ | ,, | | 572 | 11,164 | 11,736 | 1 | .. | 1 | ,, |
| Princhester Creek, The Key | ,, | J. A. Denton (P.) | J. A. Denton, private bag, Lumsden | 28 | Brown | 1 | 5½′ | 5½′ | ,, | | 265 | 3,385 | 3,650 | 1 | .. | 1 | ,, |
| Boghead, Mataura | Freehold | Thos. Gaudion (P.) | C. E. Rowe, Mataura | 25 | Lignite | 1 | 20′ to 23′ | 12′ | Bord and pillar | T. 396′ | 6,191 | 58,310 | 64,501 | 1 | 3 | 4 | Natural. |
| Mataura Lignite, Mataura | ,, | Jas. Pearson (D.) | Beattie, Coster, and Co., Ltd., Mataura | 54 | ,, | 1 | 18′ | 10′ | Ditto | T. 1,320′ | 13,218 | 344,471 | 357,689 | 2 | 6 | 8 | Fan. |
| Larking's, Mataura | ,, | P. Larking (P.) | P. Larking, Mataura | 9 | ,, | 1 | 15′ | 15′ | Opencast | | 921 | 8,702 | 9,623 | 1 | .. | 1 | Open. |
| Larking's, Waimumu | ,, | ,, | ,, | .. | ,, | 1 | 15′ | 10′ | ,, | | 650 | .. | 650 | 1 | .. | 1 | ,, |
| Ota Creek | Crown lease | E. Genge (P.) | E. Genge, Wyndham | 50 | ,, | 1 | 8′ | 8′ | ,, | | 250 | 30,584 | 30,834 | 1 | .. | 1 | ,, |
| Diamond Lignite, Ashers | ,, | A. McMillan (P.) | S. McMillan, Invercargill | 28 | ,, | 1 | 38′ | 38′ | ,, | | 967 | 34,765 | 35,732 | 1 | .. | 1 | ,, |
| Black Diamond, Nightcaps | ,, | R. W. Duncan (1st C.) | Black Diamond Coal Co., Ltd., Invercargill | 15 | Brown | 1 | 25′ | 8′ | Bord and pillar | T. 1,320′ | 9,972 | 208,404 | 218,376 | 7 | 10 | 17 | Fan. |
| Mossbank No. 1, Ohai | ,, | J. McLelland (1st C.) | Mossbank Coal Co., Ltd., Invercargill | 16 | ,, | 1 | 6′ to 24′ | 7′ | Ditto | T. 462′ | 50,613 | 263,882 | 314,495 | 20 | 58 | 78 | Fan. |
| Mossbank No. 2, Ohai | ,, | S. Reid (D.) | ,, ,, | .. | ,, | 1 | 8′ to 12′ | 7′ | ,, | ,, | | | | | | | Natural. |
| Wairaki No. 1, Ohai | ,, | J. T. Mosley (1st C.) | Wairaki Coal Co., Ltd., Gore | 17 | ,, | 1 | 15′ | 7′ | ,, | T. 1,980′ | 39,489 | 326,926 | 366,415 | 24 | 70 | 94 | Fan. |
| Wairaki No. 2, Ohai | Freehold | ,, | ,, | 12 | ,, | 1 | 16′ | 8′ | ,, | T. 900′ | | | | | | | |
| Linton, Ohai | Crown lease | Geo. Gilbert (1st C.) | Linton Coal Co., Ltd., Invercargill | 15 | ,, | 1 | 30′ to 40′ | All | ,, | T. 1,320′ | 116,910 | 614,639 | 731,549 | 35 | 130 | 165 | Fans. |
| ,, | Freehold | ,, | ,, ,, ,, | .. | ,, | 1 | 30′ to 40′ | ,, | ,, | ,, | | | | | | | |
| Black Lion, Ohai | Crown lease | Ed. Mason (2nd C.) | Black Lion Coal Co., Ltd., Invercargill | 9 | ,, | 1 | 10′ | 7′ | ,, | T. 264′ | 16,720 | 39,998 | 56,718 | 5 | 15 | 20 | Fan. |
| Smithvale, Nightcaps | Freehold | Wm. Dyet (D.) | McSkimming and Son, Benhar | 4 | ,, | 1 | 8′ | 5′ | ,, | T. 198′ | 831 | 524 | 1,355 | 1 | 2 | 3 | Open. |
| Wendon, Wendon | Crown lease | E. Radford (P.) | J. E. Radford, Wendon | 46 | Lignite | 1 | 20′ | 12′ | ,, | T. 120′ | 407 | 934 | 1,341 | 1 | 1 | 2 | Natural. |
| Otikerama | Freehold | Jos. Hoffman (P.) | A. McDonald, Otikerama | 1 | ,, | 1 | 20′ | 12′ | ,, | | 2,620 | 44,749 | 47,369 | .. | 2 | 2 | ,, |
| Waimumu | ,, | Jas. Milne (P.) | A. P. Cowie, Gore | 2 | ,, | 1 | 15′ | All | Opencast | | 1,006 | 200 | 1,206 | 1 | .. | 1 | Open. |
| McNab | ,, | J. Ramsay | Ramsay and Ross, Gore | 1 | ,, | 1 | 10′ | 10′ | ,, | | 1,683 | 701 | 2,384 | 2 | .. | 2 | ,, |
| Lobbs Hill, Ohai | Crown prospecting license | Wm. Russell (D.) | Russell and Marelich, Ohai | 1 | ,, | 1 | 4′ | 4′ | Bord and pillar | T. 160′ | 543 | 100 | 643 | 1 | 1 | 2 | Natural. |
| Rosedale, McNab | Freehold | Jas. McCord (P.) | A. Reinke, Howe | 15 | ,, | 1 | 20′ | All | Opencast | | 359 | 1,012 | 1,371 | 1 | .. | 1 | Open. |
| Croydon Coal Co. | ,, | A. Maxwell (P.) | Croydon Coal Co., Gore | 5 | ,, | 1 | 12′ | ,, | ,, | | 134 | 23,122 | 23,256 | 1 | .. | 1 | ,, |
| Birchwood No. 2, Ohai | Crown lease | Jas. Lewis (1st C.) | Birchwood Coal Co., Ltd., Dunedin | 7 | Brown | 1 | 25′ | 7′ | Bord and pillar | T. 1,230′ | 10,021 | 56,183 | 66,204 | 13 | 22 | 35 | Fan. |
| Output of mines included in previous statements at which operations have been abandoned or suspended | | | | | | | | | | | | 6,664,004 | 6,664,004 | | | | |
| Totals, Southern District, South Island | | | | | | | | | | | 489,709 | 18,343,701 | 18,833,410 | 232 | 701 | 933 | |
| Totals, West Coast District, South Island | | | | | | | | | | | 1,286,071 | 36,637,967 | 37,924,038 | 766 | 2,354 | 3,120 | |
| Totals, Northern District, North Island | | | | | | | | | | | 766,312 | 16,020,357 | 16,786,669 | 439 | 1,375 | 1,814 | |
| Grand totals | | | | | | | | | | | 2,542,092 | 71,002,025 | 73,544,117 | 1,437 | 4,430 | 5,867 | |
| Output of collieries prior to 1890 not included in the above statement | | | | | | | | | | | | | 296,653 | | | | |
| Shale exported, 1914 | | | | | | | | | | | | | 21 | | | | |
| | | | | | | | | | | | | | 73,840,791 | | | | |

# APPENDIX C.

## REPORT OF BOARDS OF EXAMINERS.

SIR,— Geological Survey Office, Wellington, 1st July, 1931.

On behalf of the Boards of Examiners under the Mining and Coal-mines Acts, I have the honour to submit the following brief report on the work of the Boards during 1930:—

It is with great regret that I record the death on the 27th July last of the late Mr. James Bishop, who had been an active member of the Board under the Coal-mines Act for nearly forty years, having been first appointed to the Board in 1891. His death was a great loss to the Board. Mr. John Watson, of Huntly, was appointed to fill the vacancy. Mr. G. E. Breeze, Chief Inspector of Machinery, was also appointed to the Board to fill the vacancy caused by the retirement of Mr. W. Cullen.

The annual examination of candidates for mine-managers' certificates under the Coal-mines Act, 1925, was held at Waihi, Huntly, Reefton, and Dunedin on the 21st, 22nd, and 23rd October. In addition, a candidate was examined at Reefton for a mine-surveyor's certificate under the Coal-mines Act, and one was examined at Waihi for a battery-superintendent's certificate under the Mining Act, 1926. Four examinations of candidates for certificates as underviewers and firemen-deputies under the Coal-mines Act were also held—one at Dunedin on the 2nd September, one at Westport on the 14th November, one at Greymouth on the 19th and 20th November, and one at Huntly on the 26th and 27th November. Three candidates were also examined at Greymouth on the 20th March for dredge-masters' certificates.

The following is a summary of the various examinations held and the results obtained:—

| Act and Examination. | Number of Candidates. | | | Number of Certificates issued. | |
|---|---|---|---|---|---|
| | Examined. | Passed. | Partial Pass. | By Examination. | By Recognized Credentials. |
| 1. *Coal-mines Act, 1925*— | | | | | |
| Mine-manager's certificate— | | | | | |
| (*a*) First class— | | | | | |
| Written examination | 16 | 4 | 2 | 2* | .. |
| Oral examination | 4 | 1 | | | |
| (*b*) Second class— | | | | | |
| Written examination | 12 | 10 | 1 | 7† | .. |
| Oral examination | 8 | 5 | | | |
| Underviewer's certificate | 28 | 13 | .. | 13 | .. |
| Fireman-deputy's certificate | 44 | 31 | .. | 31 | .. |
| Mine-surveyor's certificate | 1 | .. | .. | .. | 2 |
| 2. *Mining Act, 1926*— | | | | | |
| Battery superintendent's certificate— | | | | | |
| Written examination | 1 | 1 | 1 | .. | .. |
| Oral examination | 1 | .. | | | |
| Dredgemaster's certificate | 3 | 1 | .. | 1 | .. |

* Includes a candidate who had previously passed his examination but was required to produce further certificates regarding his ability in surveying.

† Includes two candidates who had previously passed their oral examination but who were required to complete their written examination, and were successful therein.

Under the Coal-mines Act, 1925, 118 gas-testing certificates—forty-one more than last year—were also issued, as well as two duplicate firemen-deputies' certificates and three gas-testing certificates to replace originals accidentally destroyed. Under the Mining Act, 1926, three service permits as oil-well managers were granted. The number of persons applying for certificates under the Coal-mines Act shows an increase over that of last year, but the number applying for certificates under the Mining Act was negligible. The work of the candidates who sat for examination was about the same standard as last year.

Further correspondence has been received from the British Board for Mining Examinations with reference to the issue of first- and second-class mine-managers' certificates and mine-surveyors' certificates. The British Board advises that it will recognize the Board's first-class mine-managers' certificates in the usual way, subject to satisfactory information being received as to the equivalency of the standard of training, but is not prepared to accept the Board's second-class certificates, as in its view the examinations for these certificates do not reach the standard imposed in Great Britain. As regards the first-class certificates, a person holding a New Zealand certificate would require to undergo an oral examination in all subjects and a written examination in mining legislation. If successful he would then be granted a British certificate, but not by exchange.

A complete list of certificates issued during the year is appended:—

## COAL-MINES ACT, 1925.

### First-class Mine-managers' Certificates.

*Issued after Examination.*—Pfeffer, Joseph Edward, Millerton; Young, Thomas, Dunedin.

### Second-class Mine-managers' Certificates.

*Issued after Examination.*—Currie, William Nicol, Pukemiro; Coppersmith, Alexander, Denniston; Gaskell, Gilbert, Westport; Kelly, John, Runanga; Nimmo, Allan, Ngapara; Patterson, James William, Burke's Creek; Tweedie, John, Huntly.

### Mine-surveyors' Certificates.

*Issued without Examination.*—McIntyre, Aubrey Campbell, Thornton; Schoen, Reginald Hugo, Ohai.

### Underviewers' Certificates.

*Issued after Examination.*—Barker, Richard, Dunollie; Barlow, Eli John, Hikurangi; Bond, Edwin, Huntly; Cook, Leonard, Runanga; Green, John Allen, Huntly; Grierson, Joseph, Waikokowai; Hall, David, Huntly; Hall, Thomas, Huntly; Heward, Nathan, Runanga; Moseby, Edward, Nightcaps; Olsen, Clarence Victor, Millerton; Patterson, James William, Reefton; Wight, David, Millerton.

### Firemen-deputies' Certificates.

*Issued after Examination.*—Bell, Harry, Stillwater; Bell, John, Dobson; Bond, Edwin, Huntly; Brown, William, Glen Afton; Dellaway, Thomas, Denniston; Dyet, William, Balclutha; Fleming, James, Denniston; Fletcher, Daniel, Huntly; Foot, Ernest Alfred, Hikurangi; Greenhorn, Alexander, Glen Afton; Grierson, Joseph, Waikokowai; Hall, Edward, Huntly; Hansen, Walter Allan, Roa; Hudspeth, Wilfred Lister, Brunnerton; Hunter, Archibald Joseph, Denniston; Johnson, Frederick William, Kaitangata; Joines, Frank Edward, Pukemiro; Leyshon, David, Denniston; MacKenzie, Alexander, Ohai; McDonald, Alexander, Runanga; McEwan, David, Millerton; McLean, Roderick, Reefton; Nelson, James, Pukemiro; O'Connell, John, Runanga; Patterson, Ernest, Reefton; Ruane, Francis Joseph, Dobson; Shanks, William, Tahora; Short, Samuel Nelson, Motupipi; Simpson, James Cochrane, Runanga; Smitheram, Thomas Francis, Runanga; Todd, Stephen, Granity.

## MINING ACT, 1926.

### Oil-well Managers' Service Permits.

Belcher, William Thomas, New Plymouth; Launder, Robert Henry, New Plymouth; Moore, Arthur, New Plymouth.

## MINING AMENDMENT ACT, 1927.

### Dredgemaster's Class B Certificate.

*Issued after Examination.*—Archer, Alexander Donald, Hokitika.

I have, &c.,

J. Henderson,

Chairman of Boards.

The Under-Secretary, Mines Department, Wellington.

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