1948

NEW ZEALAND

MINES STATEMENT

BY THE HON. A. McLAGAN, 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, 1947.

MINERAL PRODUCTION

The following statement shows the quantity and value of the production of metalliferous mines, quarries, and coal-mines during 1947 and 1946 :—

Mineral.	1947.		1946.	
	Quantity.	Value.	Quantity.	Value.
	Fuels	£(N.Z.)		£(N.Z.)
Coal	2,751,725 tons	4,127,588	2,793,870 tons	4,190,805
	Metals			
Gold	112,260 oz.	1,210,537	119,271 oz.	1,262,524
Silver	221,984 oz.	53,840	224,341 oz.	59,707
Platinum	..	..	14 oz.	312
Arsenic	8 tons	143	18 tons	316
Iron-ore	6,226 tons	13,841	7,406 tons	16,422
Copper-ore	580 tons	6,255	..	..
Tungsten-ore	22 tons	10,500	27 tons	6,359
Manganese-ore	..	..	402 tons	1,686
	Non-metallics			
Bentonite	215 tons	1,049	154 tons	777
Clay for bricks, tiles, &c. ..	150,808 tons	33,893	109,809 tons	26,179
Clay for pottery, fillers, &c. ..	11,970 tons	9,970	9,425 tons	5,186
Diatomite	436 tons	709	348 tons	574
Dolomite	7,034 tons	3,517	3,893 tons	1,946
Fuller's earth	31 tons	120	75 tons	318
Limestone, marl, &c., for cement	399,335 tons	73,769		
Limestone for agriculture ..	1,020,810 tons	407,759		
Limestone for industrial uses ..	18,401 tons	6,859		
Sand, gravel, &c., for roads and ballast	1,617,953 tons	478,308	2,701,462 tons	741,162
Sand, &c., for building aggregate	375,435 tons	137,123		
Dimension stone for building ..	14,528 tons	11,143		
Stone dust for coal-mines, &c. ..	1,298 tons	270		
Rock for harbour-work ..	41,347 tons	6,451		
Magnesite	362 tons	253	374 tons	262
Phosphate	200 tons	100	11,047 tons	3,314
Pumice	3,389 tons	2,635	3,409 tons	12,347
Quartzite	13 tons	33	18 tons	33
Serpentine	31,935 tons	11,803	20,058 tons	3,966
Silica sand	14,443 tons	30,358	16,949 tons	38,921
Totals	..	6,638,826	..	6,373,107

GOLD AND SILVER MINING

During the year, 334,244 oz. of bullion, valued at £1,264,377, were produced, a decrease in quantity of 8,368 oz. and a decrease in value of £57,854.

The gold content of the bullion is estimated at 112,260 oz. valued at £1,210,537, and the silver content 221,984 oz., valued at £53,840.

The estimated gold-production for the past twenty years has been as follows:—

Year.	Oz.	Year.	Oz.
1928	122,790	1938	152,050
1929	117,775	1939	178,955
1930	120,931	1940	185,665
1931	129,861	1941	174,656
1932	166,354	1942	165,986
1933	161,755	1943	149,150
1934	160,248	1944	142,287
1935	165,277	1945	128,364
1936	164,575	1946	119,271
1937	168,487	1947	112,260

Gold-production showed a decline in 1947 of 7,011 oz. compared with the previous year and is the lowest production since 1920, when an output of 109,109 oz., the lowest since 1860, was recorded.

It is not without significance that both these periods of low production should occur shortly after the conclusion of a major war. In both instances the gold-mining industry was seriously disrupted during the war period, many concerns suspending operations for the duration, while in the immediate succeeding years difficulties due to rising costs and shortages of labour and equipment militated against resumption of operations and the rehabilitation of the industry. The suspension of all prospecting and development work for the same periods, though not immediate in its outcome eventually had serious effect.

The recovery in gold-production after the first great war was due to the increase in the price of gold and to the revival of gold-dredging consequent upon the price increase and upon improved dredge design permitting of the exploitation of ground lower in grade and both deeper and heavier than that previously worked. At the moment a similar recovery cannot be predicted, as there have been no technical improvements in practice of comparable importance that can be expected to revitalize the industry.

To meet rising costs the Government has remitted in full the war tax levied on the increase (due to the war) in the price of gold, and the export tax of 12s. 6d. per ounce which has been current since 1933 has also been remitted. The total remission of gold taxation since 1945 amounts to 34s. 8d. per ounce.

Another and even more weighty reason for the decline in gold-production is the gradual exhaustion of our auriferous deposits, an exhaustion which must be regarded as inevitable after well nigh a century of active prospecting and mining operations.

Further, many considerations in the national interest, such as destruction of land of potential value for agricultural or pastoral use, river control, soil erosion, and the development of hydro-electric schemes, which were of slight concern in the past must now restrict the field available for mining.

Gold-mining has played a major part in the development of New Zealand, and, notwithstanding the considerations set out above, it is expected to continue to make a contribution to the economy of this country.

Production from quartz-mines (37,496 oz.) shows an increase of 1,144 oz., from dredges (71,531 oz.) a decrease of 7,697 oz., and from alluvial mines (3,233 oz.) a decrease of 458 oz. compared with the previous year.

There have been for some years only two producing quartz-mines of any significance, the Martha and the Blackwater, and while both these mines show a slight increase in production they are both still suffering from acute labour shortage and the number of men employed at each mine has remained practically constant throughout the year. Both mines have mechanized their operations as far as possible, and accordingly increased production is dependent entirely upon the recruitment of additional labour.

Prospecting of quartz reefs has been at a standstill for many years and there has been no move to reopen old mines other than an attempt to enlist finance for this purpose from overseas sources.

Fifteen dredges were in operation during 1947, twelve on the west coast of the South Island and three in Otago and Southland. During the year, the Blackball Creek dredge and the Redjack's dredge of Associated Gold Dredges, both of which were situated on the west coast, ceased operations, while at the present time operations have been suspended by three further dredges, reducing the number operating in the west coast to seven. It is possible that some of these dredges may be transferred to new areas.

At the present time a new dredging company is re-erecting on an area on Big River near Blackwater Creek the Nemona dredge that ceased operations some years ago.

However, it is apparent that areas suitable for exploitation by this smaller type of dredge are becoming increasingly difficult to locate. Undoubtedly the future of this section of gold-mining lies with the high-capacity dredges, seven of which were responsible for producing 81 per cent. of the gold obtained from dredging.

Most of these dredges have a comparatively long life ahead of them, a life which in some cases has been lengthened by the acquisition of additional areas. The check boring of two areas that remained dormant during the war years is now proceeding, and if satisfactory results are obtained two additional dredges of this type will be constructed. Beyond this it is difficult to foresee further progress, as there was an intensive prospecting programme for dredging areas carried out in the years immediately preceding the war.

Production from alluvial mines has been steadily decreasing for many years and further decline seems inevitable.

Deposits suitable for this type of mining are now approaching exhaustion, while there are also difficulties in securing adequate water-supplies owing to their diversion to other uses such as irrigation.

During 1947, 221,984 oz. of silver, valued at £53,840, were produced, as compared with 224,341 oz., valued at £59,707, in 1946. Practically the whole of this output was obtained from the Martha Mine.

The following table shows the production of the principal quartz-mines, dredges, and alluvial mines for the year ended 31st December, 1947. It will be noted that over 87 per cent. of the total production of gold is obtained from two quartz-mines and seven high-capacity dredges :—

—	Ore, in Tons.	Development, in Feet.	Men employed.	Gold (Ounces).	Silver (Ounces).	£(N.Z.).
Quartz-mines						
Martha	108,747	4,622	481	28,983	220,169	363,966
Blackwater	22,915	1,838	134	8,168	..	87,248
Callery Party, Macrae's Flat	1,052	..	4	227	..	2,441
Sundry	..	..	13	118	73	1,169
Totals ..	..	..	632	37,496	220,242	454,824

	Yardage.	Acreage.	Average Depth, in Feet.	Men employed.	Gold (Ounces).	Silver (Ounces).	£(N.Z.).
Dredges							
Grey River	3,741,732	78·352	29·6	27	13,476	374	154,738
Blackball Creek ..	..	..	35·0	10	300	..	3,000
Arahura	3,157,000	22·030	88·8	42	11,397	390	122,116
Rimu	1,917,013	26·619	44·6	39	9,594	298	109,577
Kanieri	2,908,000	23·441	76·9	44	6,775	255	72,600
Ngahere	2,023,690	16·245	77·2	26	4,741	26	49,017
Snowy River	715,000	24·620	18·0	14	3,890	..	38,256
Red Jacks	554,083	14·000	22·5	16	828	..	8,731
Atarau	1,337,148	25·000	24·5	12	2,052	..	21,206
Marsden	1,425,348	33·000	30·5	12	1,872	..	19,282
Slab Hut	539,050	15·190	22·0	12	862	..	8,686
Callaghans	130,000	3·500	23·0	9	492	..	4,750
Austral N.Z.	3,359,000	44·666	46·6	52	8,275	399	89,132
Clutha	2,522,000	26·500	78·0	24	6,761	..	73,064
Rainbow	..	..	5·0	2	216	..	2,171
Totals	..	..	..	341	71,531	1,742	776,326
Alluvial Mines							
Addisons Flat	18,300	..	7	2	45	..	457
Moonlight	..	..	175	3	254	..	2,604
Golden Sands	..	..	40	3	257	..	2,413
Waitahu	..	..	20	4	304	..	3,274
Round Hill	..	..	..	6	460	..	4,749
Sundry	..	..	..	176	1,913	..	19,730
Totals	..	..	..	194	3,233	..	33,227
Grand totals ..	..	..	..	..	112,260	221,984	1,264,377

PETROLEUM OIL

No prospecting-work for petroleum was carried out in New Zealand during 1947, the only activity in this field being the continuation of small-scale production from the area near New Plymouth previously held under petroleum mining licence by Moturoa Oil Fields, Ltd., and now transferred to New Zealand Oil Refineries, Ltd. From three wells in this area 82,307 gallons of crude petroleum oil were obtained during 1947, as against 81,625 gallons during 1946, thus bringing the Dominion's total production of crude petroleum oil up to 31st December, 1947, to 3,666,714 gallons.

It is the intention of New Zealand Oil Refineries, Ltd., to drill two additional wells in this area, and the derrick is now in place at the site of the first borehole and drilling-operations will be commenced at an early date.

While no extravagant hopes can be held out as to the result of this work and it can add little to our knowledge of the geology of this oil occurrence, it is still of importance if the present production can be maintained and possibly increased thereby.

COAL-MINING

The annual production of coal since 1930 has been as follows :—

Year.	Tons.	Year.	Tons.
1930	2,542,092	1939	2,342,639
1931	2,157,756	1940	2,516,099
1932	1,842,022	1941	2,639,507
1933	1,821,258	1942	2,680,041
1934	2,060,315	1943	2,787,868
1935	2,115,184	1944	2,805,970
1936	2,140,217	1945	2,833,576
1937	2,277,799	1946	2,793,870
1938	2,222,088	1947	2,751,725

It will be noted from the table above that, while production has been sustained at an appreciably higher level than that of the pre-war years, there has been a gradual decline in output from the peak year of 1945, when the record production of 2,833,576 tons was achieved. However, this decline has definitely been arrested during the current year, and production for the six months ended 30th June, 1948, shows an increase of approximately 100,000 tons over the similar period in 1947.

During 1947, 173 mines were in operation. Of these, 60 mines operated wholly or principally on freehold land and the remaining 113 wholly or predominantly on Crown land.

Output from freehold land was 1,020,554 tons (37 per cent.) and output from Crown land 1,731,171 tons (63 per cent.).

Imports of coal in 1947 returned to somewhere approximating the pre-war level and amounted to 93,411 tons, as against 27,185 tons in 1946 and no importations in the years 1945 and 1944. All of the coal imported in 1947 came from Wyoming, United States of America, and all of it was used on the railways.

A further shipment from Wyoming arrived early in 1948, making a total of some 125,000 tons received from this source. It was then found necessary to seek an alternative source of supply and two shipments, amounting to some 18,000 tons, were obtained from the United Kingdom, and later trial shipments were imported from India and South Africa. While the coal from India proved disappointing, the South African proved to be suitable for railway use. Unfortunately, owing to internal transport difficulties in South Africa it has not been possible to secure as much of this coal as is desirable, and imports of coal for the current year will probably show a substantial reduction.

Exports of coal in 1947 amounted to 28,035 tons, as compared with 27,366 tons in 1946.

In 1947, 2,107,033 tons were produced from underground mines, compared with 2,265,170 tons in 1946; and from opencast mines 644,692 tons were produced in 1947, as against 528,700 tons in 1946.

The output per miner employed underground was 564 tons, a decrease of 29 tons as compared with 1946.

The production per man on the pay-roll of underground mines—*i.e.*, both underground and surface workers—was 421 tons, a decrease of 20 tons on the previous year.

Production per man employed in opencast mines was 1,492 tons, an increase of 248 tons as compared with 1946.

The overall production per man employed in the industry—*i.e.*, combined underground and opencast mines—amounted to 506 tons, an increase of 3 tons as compared with 1946.

Comparative figures for the years from 1930 onward are given in the tabulation below:—

Year.	Output.	Men employed Underground.	Tons per Man Underground.	Men employed on Surface.	Tons per Man on Pay-roll.
Underground Mines					
1930	2,530,661	4,430	571	1,409	433
1931	2,143,023	4,331	495	1,375	376
1932	1,826,110	3,379	540	1,214	398
1933	1,797,869	3,194	563	1,134	415
1934	2,042,228	3,249	629	1,172	462
1935	2,098,904	3,104	676	1,083	501
1936	2,108,238	3,154	668	1,040	503
1937	2,238,651	3,288	681	1,074	513
1938	2,180,122	3,368	647	1,142	483
1939	2,296,007	3,542	648	1,164	488
1940	2,465,336	3,769	654	1,241	492
1941	2,585,324	3,633	712	1,325	521
1942	2,624,267	3,659	717	1,291	530
1943	2,725,831	3,999	682	1,329	512
1944	2,609,516	3,958	659	1,395	489
1945	2,380,896	3,932	606	1,328	453
1946	2,265,170	3,819	593	1,313	441
1947	2,107,033	3,739	564	1,271	421

Year.	Output.	Men employed.	Tons per Man employed.
Opencast Mines			
1930	11,431	28	520
1931	14,733	39	378
1932	15,912	43	370
1933	23,389	58	403
1934	18,087	57	317
1935	16,280	44	370
1936	31,979	63	508
1937	39,148	55	712
1938	41,966	53	792
1939	46,632	56	833
1940	50,763	36	1,410
1941	54,183	33	1,642
1942	55,774	47	1,187
1943	62,037	46	1,349
1944	196,454	242	812
1945	452,680	332	1,363
1946	528,700	425	1,244
1947	644,692	432	1,492
All Mines			
1930	2,542,092	5,867	433
1931	2,157,756	5,745	376
1932	1,842,022	4,636	397
1933	1,821,258	4,386	415
1934	2,060,315	4,478	460
1935	2,115,184	4,231	500
1936	2,140,217	4,257	503
1937	2,277,799	4,417	516
1938	2,222,088	4,563	487
1939	2,342,639	4,762	492
1940	2,516,099	5,046	499
1941	2,639,507	4,991	529
1942	2,680,041	4,997	536
1943	2,787,868	5,374	519
1944	2,805,970	5,595	502
1945	2,833,576	5,592	507
1946	2,793,870	5,557	503
1947	2,751,725	5,442	506

The trend that has been noted in previous years' Statements whereby production from underground mines decreased and production from opencast mines increased continued during 1947. Likewise, the decline in the output-per-man figures for underground mines both in the output per man underground and in the output per man on pay-roll was continued during 1947, while the number of men employed both underground and on the surface at underground mines also decreased. As previously pointed out, this is due to more difficult mining conditions, shortage of equipment required to mechanize operations, and the reluctance of men to enter the industry despite the improved conditions now prevailing.

As has already been mentioned above, coal-production during the present year has already shown an upward trend, and what is most reassuring is that 80 per cent. of this increase has been due to production from underground mines. It has been most gratifying that this increase has been maintained and increased, if anything, since the introduction of the seven-hour day in underground mines which commenced in April of this year.

The provision of hostels in mining centres now being undertaken by the Labour and Employment Department whereby excellent accommodation and living conditions are provided for single men should assist in attracting young men into the industry.

One of these hostels has already been completed at Reefton, construction work is proceeding upon units at Ohai and Huntly, and plans have been prepared for hostels at Granity, Denniston, Blackball, and Greymouth. At the same time every effort is being made to provide additional houses for married men in mining districts, as far as the difficulties general to the whole building position of the country will permit.

Provision of housing is fundamental to increasing the number of workers in coal-mines, upon which increased production must in great part depend.

Under the Government's immigration policy it has already been possible to engage men from Great Britain, and, while some of these have not had previous mining experience, they have proved quite satisfactory and a welcome addition to our labour force.

The production of bituminous coal showed a slight recession compared with the previous year.

It is recognized that an expansion in the output of this class of coal, especially in the low-sulphur category, is cardinal to improvement in the general coal-supply situation, and it is expected that the programme outlined in this report will eventually enable the existing problem to be surmounted. Some time must elapse, however, before new mines can be brought into full production, and until this can be achieved it will be essential to import suitable coal from overseas to bridge the gap between production and the needs of consumers.

During the year, production was commenced at the new field of this type of coal at Garvey Creek, near Reefton, but output is necessarily still on the small scale. Many difficulties have had to be overcome in providing access, and the section of the field in which operations have had to commence, though it contains a thick seam, presents some difficult mining problems owing to the vertical inclination of the seam. However, it is expected that output will gradually expand from this section, and when access has been provided to other sections the field as a whole will be capable of large-scale production, even though this stage still lies some years ahead.

Plans for the opening-up of a new area near Rewanui as a replacement for the Liverpool Mine have had to be deferred owing to the inclusion in this area of a small section held under lease by a co-operative party which is working an upper seam. Arrangements have now been made whereby drilling from this party's mine underground can be carried out and the rights to the lower seams acquired should drilling be successful. Drilling is now proceeding, and a decision as to the plan of opening up the area should be possible at an early date. Difficulties in securing equipment have also militated against the opening-up of this area.

An order has recently been placed overseas for the aerial ropeway to serve the Stockton Plateau, both opencast and underground mines, and it is expected that this aerial will be constructed and in operation in the beginning of the year 1951. From this time onward increased production should be possible from Stockton, as transport is now a limiting factor.

With the acquisition by the State of the undertaking of the Westport Coal Co., consideration has been given to the opening-up of new mines so that production may be maintained and increased.

A survey party similar to that which has been in operation at Stockton for some time has commenced work on the detailed topographical and geological surveys necessary to the intelligent layout of a new mine, and a drilling programme is being carried out by two of the Department's diamond drills.

As a result of this work it has been decided to proceed first with the opening-up of the Plateau Lease at Denniston, and when further information is available from the drilling programme a definite plan of development can be prepared. In addition, the question of transport facilities at Denniston to serve this new area and the areas at present working is being reviewed.

At Millerton, survey work has commenced in the search for a new underground mine to replace the present mine, in which all development work has been completed.

The opening-up of the Morley Block, in the Ohai Coalfield, has been deferred until such time as the adjoining Star Mine area recently purchased by the State could be investigated. A drilling programme has now been completed which proves that the Star area immediately adjoining the Morley Block contains a considerable extent of the Morley seams, in particular the lower or No. 2 seam, and thereby the tonnage of coal available in one compact block has been considerably increased.

In the Kaitangata Field three holes recently put down by the Kaitangata Co. have proved a considerable tonnage of coal, and it is stated that the company propose opening up this area in the near future. The bore put down by the Mines Department on its property in the Wangaloa Block indicates that the deeper coal-seams have evidently thinned in this direction.

During the year, the Waro Colliery, situated at Hikurangi, ceased operations owing to exhaustion of coal, and while the output of this colliery had never been of any magnitude, it was of considerable importance to the coal-supply position of North Auckland. With the acquisition by the State of the Kamo Coal-mine, it has been possible to transfer the miners from Hikurangi to Kamo, and development work is proceeding to allow of an expanded output from this mine and thus bridge the gap in the supply position.

In addition to plans for increased production, consideration has been given to the utilization of coal to the greatest advantage, and the Fuel Technologist of the Department of Scientific and Industrial Research has been employed investigating the use of coal and advising consumers.

OPENCAST MINING

Production of coal from opencast mines continues to increase, and for the year 1947 the output from this form of mining was 644,692 tons, against 528,700 tons in 1946.

Although it was not until October, 1943, with the opening-up of the Glen Afton opencast mine, that attention was directed to the mechanized form of opencast mining, production from the opencast mines commencing operations since that date had reached on 31st May of this year a total of 1,670,289 tons. Eight State-operated opencast mines contributed 394,160 tons to the 1947 total, almost two-thirds of the total.

Stockton continues to be the most important opencast mine, both in respect of output and of quality of coal produced. Not only was the output of 154,803 tons a record for this type of mine, but the coal is of good grade bituminous type, the type of which the supply position continues to be the most acute. It is worthy of mention that this production was achieved despite difficult climatic conditions due to the high elevation and a rainfall which exceeds 200 in. a year.

The organization which has been in operation for the past two years has continued to prepare the way for future opencast operations by detailed topographical surveys and surface prospecting, while recently additional information is being obtained by the use of two diamond drills, so that continued production from this form of mining is assured for many years.

In order to permit of deeper ground being stripped, new equipment has been ordered comprising a special stripping-shovel with 5-cubic-yard bucket and 46 ft. boom, two blast hole-drillers, four 20-yard muck-wagons, and a new fleet of motor-trucks. With the completion of the aerial ropeway previously mentioned, production from opencast mining in the Stockton area should increase.

It is becoming increasingly apparent that the Huntly Coalfield offers considerable scope for opencast mining. During 1947, operations ceased at the Glen Afton opencast owing to exhaustion of the coal, but work continued at both Kimihia and Kemp's. At the latter mine stripping-operations should be completed at the end of this year, but

a long life is assured at Kimihia, where the No. 5 area is estimated to contain 527,000 tons of coal with 2,406,000 cubic yards of overburden. Additional equipment in the shape of Athey wagons and conveyor belts to work between the pit and the screens have recently been ordered for this mine.

Boring-operations have indicated an area containing 60,000 tons of coal in the vicinity of the Wilton State Coal-mine suitable for opencast mining, and a commencement will be made on this area as soon as stripping-operations are complete at Kemp's. In addition to these State-controlled opencasts, a new opencast, the Alison, commenced operations in the Huntly Field during 1947 under private control. In the Waitewhena Field, operations continued satisfactorily, despite difficult stripping-conditions. At Ohai the Bar 20 State opencast mine became exhausted during the year, but operations were commenced at the Black Diamond Mine, purchased by the State during the year. Boring-operations have recently outlined an attractive area for opencasting on the Star area at Ohai and work has already commenced there and production is expected by October of this year. At Wangaloa the State opencast continued operations successfully during the year. There is considerable scope for expansion of this form of mining in this area, and the Mines Department is investigating adjoining areas.

Consideration is now being given to the restoration of areas containing abandoned opencast mines. At Glen Afton, pines have been planted and are growing well. On the other hand, experiments with the planting of pines and toetoe at Kemp's have not been successful owing to the high sulphur content of the coal and overburden, but experiments are proceeding on soil consolidation. At the new opencast at Star Mine the topsoil will be removed separately and the surface restored, as far as possible, to its original state.

As experience is gained in this form of mining and modern high-capacity equipment becomes available, it is realized that it is capable of extension beyond the limitations previously set. It has the merit of allowing practically full extraction of the coal, and hence must be considered from the angle of coal conservation.

It is expected that there will be considerable expansion of opencast mining, and to assist this the technical staff of the Mines Department has been strengthened by the addition of an Engineer experienced in this form of mining.

MINING PRACTICE

Owing to difficulties in obtaining equipment overseas it has not been possible to proceed as far as was planned in the mechanization of coal-mines. In particular, the programme announced last year for the Wilton State Coal-mine has not as yet been carried out in its entirety for this reason, though increased use of coal-cutters has been made at this colliery with satisfactory results.

During the year a programme for the mechanization of the Webb State Coal-mine at Stockton was drawn up, and orders have been placed for £80,000 worth of equipment. The plant ordered includes main belt conveyors, subsidiary belt conveyors, chain scraper conveyors, pneumatic picks, and rotary air-drills, together with compressors and the requisite subsidiary equipment. For a commencement the operations must be regarded to a certain extent as experimental, but the results will be invaluable when the mechanization of other State coal-mines comes under consideration.

It is expected that the projected Morley State Coal-mine in the Ohai Field will lend itself to mechanization, and to this end the District Manager, State Coal-mines, Ohai, together with the District Manager, State Coal-mines, Mangapehi, have recently visited Australia in order to make themselves conversant with mining practice in that country.

Further consideration has been given to the proposals to experiment with hydraulic stowage at the Mangapehi State Coal-mine. A detailed survey has shown that there are difficulties in the use of the pumice deposits which were originally intended for this

purpose, but alternative sources of supply are now being examined. The District Manager of this mine has recently, during his trip to Australia, had opportunities to observe this method of stowage as practised in Australia.

INVESTIGATION OF COAL RESOURCES OF NEW ZEALAND

As in past years, the investigation of coal resources was continued by three organizations working in close co-operation. These organizations are (1) The Coal Survey, whose activities are mainly geological and chemical; (2) an organization set up by the Mines Department to follow up the Coal Survey with detailed topographical surveys and shallow prospecting by means of cuts, pits, and hand drilling; (3) the drilling section of the Mines Department carrying out investigations by deep core drilling.

While considerable progress was made by all of these organizations, information is not yet available to warrant any re-estimate of the coal resources of New Zealand, and the position accordingly remains as set out in the Mines Statement for the year 1945.

An interesting feature of the year's operations was the reconnaissance surveys carried out in two entirely new areas—namely, Flat Creek, in the Maruia River Valley, and Newton River, near Murchison. Preliminary surveys show that in both areas the quantity of coal is limited and access is difficult, while in the case of the Newton River occurrence the sulphur content is very high indeed. Accordingly, neither field can be regarded as of immediate importance and detailed investigation may well be deferred.

Particulars of the operations of the Coal Survey and of drilling-operations of the Mines Department are set out elsewhere in this Statement. The work carried out by the Mines Department survey parties has been as follows:—

Garrey Creek Coalfield.—Five men have been engaged on prospecting work in Blocks A, B, C, and D in this field.

Block A: Work on this block, which includes the vertical seam, has now been completed. This seam has been traced and trenched along the outcrop and proved over a distance of 60 chains. The thickness of this seam varies from 10 ft. to 50 ft., with an average in excess of 30 ft.

Block B, Island Block: Prospecting-work was continued on the A, B, C, and D seams. The A seam varies in thickness up to 50 ft., inclusive of stone and dirt bands from 1 in. to 4 ft. in thickness. In one portion the stone bands are so numerous that it is probable an east-west belt, 6 chains wide, may contain very little workable coal. From data now available it is estimated this seam in this block contains 3,000,000 tons of coal. The proportion of extractable coal will depend upon the system of extraction and mining conditions.

B Seam: This seam occurs 40 ft. to 60 ft. vertically above A seam. It varies from 1 ft. to 7 ft. in thickness and has been traced and trenched for the full extent of the block. It varies in quality and in thickness, and except in minor portions is not suitable for mining.

C Seam: This seam is 140 ft. vertically above the A seam. From the southern end of the block, where it is 10 ft. in thickness, it has been traced to the north for 27 chains. It gradually thins on both the east and west side of the Island Block, and prospecting was discontinued when the thickness was less than 2 ft.

D Seam: Little work was done on the D seam, which does not exceed 2 ft. in thickness.

Block C: This block extends from the southern end of the Island Block around the Wellman Creek Basin. The prospecting and trenching of the upper seams in this block is now completed. Other than the A seam, no workable coal has been proved to exist in this block.

Block D: The A seam was traced and trenched around the basin of Jones Creek and over the ridge into the watershed of McConnachie Creek. The structure in this block is complex and, although an appreciable quantity of workable coal exists in the area, it is impossible to form any estimate until survey work is completed.

Blocks E and F: Reconnaissance has been made and camps erected for the investigation of the area on the Waitahu side of the dividing ridge and also the area of coal measures in the Montgomery River watershed.

Owing to shortage of survey staff, the mapping of structure and the location of seams and estimates of quantity have fallen into arrears.

Smoko Area, Blackball.—An area at the head of Iron Creek, Blackball, was prospected for opencast coal by shallow drilling and surface prospecting. This work proved the quantity of coal in the area to be insufficient to warrant development.

Coal Island, Roa.—A small block of shallow coal in the vicinity of Roa was prospected with a view to opencasting. The quantity of coal proved in this block was insufficient to justify the cost of making access.

Stony Batter and Peerless Creeks, Reefton.—Surface investigations were carried out in these areas relative to reports on behalf of the Crown in the Burke's Creek arbitration.

Flat Creek Area, Maruia.—Reconnaissance work in conjunction with the staff of the Geological Survey, Greymouth, was carried out in the coal measures, Flat Creek area. The coal-seam in this locality is thick and of high rank. The workable area is not great—the structure is complex and access is difficult.

Newton River.—Following reports of workable coal-seams in this district, extensive reconnaissances in collaboration with the Geological Survey were carried out in the coal measures between the Buller River and the headwaters of the Newton River.

Outcrops of coal occur over a very large area, but generally the seam is thin and/or contains dirt and stone bands. In a tributary of the Newton River a high-sulphur coal of excellent quality and of a workable thickness was located, but the area of thick coal is comparatively small. It is remote and difficult of access.

Kaitangata.—Shallow drilling was carried out in the Kaitangata district to prove the extent of the area available for opencasting at the Department's opencast mine at Wangaloa.

Prospecting, followed by shallow drilling, located and proved an additional area for opencasting in the Pivot Creek and Harvey Creek watersheds, Wangaloa Block.

The quantity of opencastable coal proved in this area is in excess of 500,000 tons.

Westport Coal Field.—The detailed investigation of the coalfield on the northern end of the Westport Stockton Plateau was continued. The prospecting of areas adjacent to the Stockton State Mine was completed, and examinations were made and areas mapped on the main escarpment from Mount Augustus to Mount Frederick.

Detailed examinations were made and reports prepared on the Mangatina area, Millerton Mine, and on the Plateau area, Denniston.

The following table shows the output of coal from the various coalfields and the comparative increases and decreases for the years 1947 and 1946, together with the approximate total production to date :—

Coalfield.	Output.		Increase.	Decrease.	Approximate Total Output up to 31st December, 1947.
	1947.	1946.			
	Tons.	Tons.	Tons.	Tons.	Tons.
North Auckland	64,368	77,773	..	13,405	6,606,320
Waikato (including Taranaki) ..	915,652	902,876	12,776	..	24,819,243
Nelson	7,387	6,891	496	..	765,801
Buller	549,151	535,174	13,977	..	30,046,794
Reefton	130,759	128,574	2,185	..	1,951,451
Grey	468,282	486,517	..	18,235	22,488,975
Canterbury	34,780	34,037	743	..	1,408,011
Otago	203,889	209,647	..	5,758	15,541,310
Southland	377,457	412,381	..	34,924	11,000,820
Totals	2,751,725	2,793,870	30,177	72,322	114,628,725

The outputs of the various classes of coal mined in each inspection district were :-

Class of Coal.	Northern District (North Island).	West Coast District (South Island).	Southern District (South Island).	Total.	Total Output to 31st December, 1947.
	Tons.	Tons.	Tons.	Tons.	Tons.
Anthracite	..	..	1,606	1,606	16,932
Bituminous	..	934,365	..	934,365	61,387,474
Sub-bituminous	980,020	161,385	363,537	1,504,942	46,111,744
Lignite	..	59,829	250,983	310,812	7,112,575
Total for 1947	980,020	1,155,579	616,126	2,751,725	114,628,725
Total for 1946	980,649	1,157,156	656,065	2,793,870	111,877,000

Table Showing the Increase or Decrease in the Annual Production of Coal and the Quantity of Coal Imported

Year.	Coal produced.		Coal imported.		
	Tons.	Yearly Increase or Decrease.	Tons.	Increase over Preceding Year.	Decrease below Preceding Year.
Prior to 1930	71,298,699	..	12,734,199	..	..
1930	2,542,092	Inc. 6,288	157,943	..	57,713
1931	2,157,756	Dec. 384,336	179,060	21,117	..
1932	1,842,022	Dec. 315,734	103,531	..	75,529
1933	1,821,258	Dec. 20,764	99,272	..	4,259
1934	2,060,315	Inc. 239,057	100,715	1,443	..
1935	2,115,184	Inc. 54,869	97,398	..	3,317
1936	2,140,217	Inc. 25,033	111,078	13,680	..
1937	2,277,799	Inc. 137,582	116,499	5,421	..
1938	2,222,088	Dec. 55,711	109,206	..	7,293
1939	2,342,639	Inc. 120,551	111,537	2,331	..
1940	2,516,099	Inc. 173,460	64,860	..	46,677
1941	2,639,507	Inc. 123,408	78,171	13,311	..
1942	2,680,041	Inc. 40,534	90,865	12,694	..
1943	2,787,868	Inc. 107,827	37,454	..	53,411
1944	2,805,970	Inc. 18,102	..	..	37,454
1945	2,833,576	Inc. 27,606	..	..	..
1946	2,793,870	Dec. 39,706	27,185	27,185	..
1947	2,751,725	Dec. 42,145	93,411	66,226	..

Table showing the Quantity of Coal exported from New Zealand from 1930 to 1946

Year.	Tons.	Year.	Tons.
1930	126,118	1939	43,990
1931	48,334	1940	81,287
1932	35,866	1941	58,179
1933	34,131	1942	54,700
1934	40,361	1943	42,522
1935	46,146	1944	37,688
1936	44,872	1945	21,989
1937	113,116	1946	27,366
1938	55,711	1947	28,035

SUBSIDY ON COAL-PRODUCTION

Payments administered by the Mines Department for the financia year ended 31st March, 1948, from the Stabilization Account were :—

	£	s.	d.
District tonnage subsidies	856,925	13	8
Subsidy on Saturday work	58,043	15	9
Subsidy on work on statutory holidays	53,074	16	6
Subsidy on shift bonuses	34,390	9	0
Subsidy on increased cost of tools	9,112	13	7
Special subsidies on uneconomic mines operated by the State	167,380	0	0
Guaranteed profits (Waikato mines)	175,130	0	0
Administration costs (Waikato mines)	3,974	17	0
Miscellaneous	105,499	6	7
	£1,463,531	12	1

Of this amount, £715,743 was in respect of State coal-mines and £747,789 in respect of privately owned mines.

The figures given are the actual payments by Treasury during the financial year. During the period, the State coal-mines earned subsidies to the amount of £813,146, as shown in the accounts (C.–2A). The difference between this figure and the sum of £715,743 represents subsidies not verified and paid until after the end of the financial year.

The total amount paid by way of general subsidies from the inception of the scheme in May, 1940, to 31st March, 1948, is £5,692,970.

The total amount expended under the Waikato Coal-mines Control Emergency Regulations 1942 to 31st March, 1948, is £589,858, giving a grand total to date for all forms of subsidy of £6,282,828.

In December, 1939, the approximate average price (f.o.r.) of run-of-mine coal was £1 per ton, and at this level the price was stabilized until 1st October, 1947, when the average price was advanced by approximately 1s. 6d. per ton. However, during the year ended 31st March, 1948, subsidy payments on coal due for this period, together with the amount due under the guaranteed net-profits clause of the Waikato Coal-mines Control Emergency Regulations for the same period, would average approximately 11s. 6d. per ton of coal produced.

Accordingly it must be assumed that were it not for payments in respect of subsidy and guaranteed net profits the average price f.o.r. of run-of-mine coal would have advanced by 11s. 6d. per ton to 33s. per ton.

During the same period the statistical statements of the Ministry of Fuel and Power and the National Coal Board of Great Britain show that the average proceeds per ton of coal disposable commercially has increased from 17s. 6d. in December, 1939, to 42s. 10·7d. for the quarter ended 31st December, 1947.

CO-OPERATIVE MINING, STATE COAL RESERVE, GREYMOUTH

During the year 1947, sixteen co-operative coal-mining parties were operating on areas within the State Coal Reserve, Greymouth. The production for the year was 84,925 tons and the number of men employed was 130. In 1946, fifteen parties produced 88,709 tons.

Co-operative parties have produced to date 2,162,142 tons of coal and have paid royalties to the Crown amounting in the aggregate to £104,381.

WAIKATO COAL-MINES CONTROL

The mines owned by Glen Afton Collieries, Ltd., Pukemiro Collieries, Ltd., Renown Collieries, Ltd., and Taupiri Coal Mines, Ltd., were operated during the year under the provisions of the Waikato Coal-mines Control Emergency Regulations 1942.

During the year ended 31st March, 1948, the sum of £179,104 17s. was expended in respect of claims for guaranteed profits for companies' financial years ending in 1947 and in administration costs, making the total amount paid to date under the control scheme £589,858 1s. 6d.

The amount paid for the year ended 31st March, 1948, represents final settlement of all claims, with the exception of that from Taupiri Coal Mines, Ltd., for the year ended 31st March, 1947. In this case a progress payment of £40,000 has been made.

CARBONIZING AND BRIQUETTING

The production of the low-temperature coal carbonizing and briquetting plant of Waikato Carbonization, Ltd., at Rotowaro during 1947 was:—

Raw coal carbonized	21,982 tons.
Carbonized coal produced	10,592 tons.
Average percentage of carbonized to raw coal	49 per cent.
Carbonettes manufactured	11,353 tons.
Tar and oil treated	188,457 gallons.
Pitch produced	158 tons.
Light and heavy oils produced	120,944 gallons.
Char sold for producer gas plants	Nil.
Char sold for other purposes	813 tons.

For the same period Smokeless Fuel and Briquettes (Canterbury), Ltd., produced 21,624 gallons of tar, 56 tons of briquettes, and 3,574 tons of metallurgical coke.

Early in the present year arrangments were made whereby Mr. A. B. Jones, manager of Waikato Carbonization, Ltd., who has been acting as consulting engineer to the Mines Department on briquetting problems, was able to proceed overseas and investigate modern practice in briquetting and other forms of coal-processing. Mr. Jones has now returned to New Zealand and his report upon the results of his investigations will be available at an early date.

MINERALS OTHER THAN GOLD

The trend that has been disclosed in previous Statements in the development of these minerals continued during the present year. Despite a certain amount of interest due to the world shortage of base metals and the resulting high prices ruling for these metals and their ores, so far this interest has not been translated into practical mining activity and the production of such ores remains of little importance.

On the other hand, production of the non-metallic minerals tends to increase, in particular such minerals as have value as fertilizers such as limestone and serpentine, dolomite and magnesite. Production of clays shows a considerable increase, but this is due in great part to the better statistical information that is becoming available as the importance of these minerals is more fully realized. It is becoming increasingly apparent that after coal the future of New Zealand's mineral industry lies mainly in the development of its non-metallic minerals, and accordingly the mineral-production tabulation this year shows the production of such minerals in greater detail than formerly.

Scheelite.—Despite the high price of approximately £500 per ton prevailing during the year, there was a further decline in the production of scheelite concentrates, the equivalent of 22 tons of concentrates assaying 65 per cent. WO_3 being produced and shipped during 1947, as against 27 tons in 1946, 34 tons in 1945, and 145 tons in 1944,

the peak year of wartime production when the State mines were in active production. With the exception of two small parcels obtained from Macrae's Flat, production was confined to the Glenorchy Field. Owing to the exhaustion of ore reserves in this field during the war years, many of the parties have been engaged in prospecting work rather than in active exploitation, and production has suffered in consequence. The arrangement whereby the treatment plant acquired by the Mines Department was leased on a tribute basis continued to provide adequate treatment facilities for this field. With the expectation of continued high prices for tungsten-ores, increased production awaits some measure of success in prospecting-operations and the attraction of additional miners to the district.

Copper-ore.—After many years of inactivity, copper-mining was resumed in New Zealand during 1946, when operations were commenced at a copper-ore occurrence at Pakotai, in North Auckland. It was not, however, until 1947 that it was possible to make a shipment to the smelter at Port Kembla, in Australia, when a parcel of 580 tons averaging approximately 13 per cent. of copper, 3 dwt. of gold, and 33 dwt. of silver per ton realized £6,255. Not only did this shipment determine the grade of the ore, but it was also of some assistance to the economy of the country, in that it enabled the import in manufactured form of half of the copper content of the parcel which would have been otherwise unprocurable. Some difficulty was experienced in the shipping of the ore owing to its propensity to heat, and it was realized that future shipments would be dependent upon treatment of the ore by conversion to matte. In order to assist in determining whether sufficient ore existed to warrant the purchase of a furnace, a drilling programme was carried out by the Mines Department. Unfortunately, results from this programme were disappointing, and a geophysical survey of the area carried out by the Department of Scientific and Industrial Research has failed to improve the position, and the future of the property is dependent upon the discovery of additional ore-bodies.

Iron-ore.—A total of 6,226 tons of iron-ore were produced from the deposits in North Auckland and at Onekaka for use in gas-purification, in the manufacture of stock-licks, and in the cement industry. It is of interest that the State Iron and Steel Department proposes carrying out large-scale experiments in the smelting of Taranaki ironsands and Onekaka iron-ore by the use of an electric furnace.

Manganese-ore.—No shipment of manganese-ore was made during the year, but the tributor who is working Mirandite Products, Ltd.'s mine at Clevedon produced the major portion of a 500-ton parcel of ore which now awaits shipment to Australia.

Mercury.—There was again no production of mercury and the property and plant of Mercury Mines, Ltd., has remained on a care and maintenance basis.

Antimony.—The present high price ruling for antimony-ores has again directed attention to deposits of these ores in Central Otago, and prospecting-operations are being carried out at three separate localities in this district. So far operations have not progressed beyond the prospecting stage and there has been as yet no production of ore for shipment.

Arsenic.—Eight tons of arsenic were recovered as a by-product from the roasting of gold-ores at the treatment plant of the Blackwater Gold-mine.

Asbestos.—The mine and plant of the Hume Pipe Co. in the Upper Takaka district continued on a care and maintenance basis and there was no production of asbestos, but resumption of operations was foreshadowed in the company's last annual report.

Bentonite.—Of a value of £1,049, 215 tons of bentonite were produced from the deposit at Porangahau, as against 154 tons, valued at £777, in 1946. A treatment plant comprising dryer, grinding plant, and air-float separator has now been installed, and, with some addition to the grinding section, bentonite in a marketable processed form will be available instead of the crude lump sun-dried form previously produced. It is expected that production will increase in consequence of the expanded market available.

Phosphate.—During 1947, 200 tons of low-grade phosphatic sandstone were produced from the Clarendon deposits, as against 11,047 tons in 1946. Resumption of imports of rock phosphate from Nauru has coincided with the exhaustion of the more favourable sections of this deposit, and operations have now terminated. In all, 42,685 tons of this material have been produced since operations commenced during the war.

Serpentine.—During the year, 31,935 tons of serpentine were produced, as against 20,058 tons in 1946. Of the total amount produced in 1947, 5,276 tons were obtained from North Auckland, 23,363 tons from Piopio, near Te Kuiti, and 3,296 tons from Mossburn, in the South Island. All the serpentine produced was used in the manufacture of serpentine-superphosphate, for which there is continued demand. Since the manufacture of this fertilizer was commenced during the war years, 204,391 tons of serpentine have been used for this purpose.

Limestone.—There was again a substantial increase in the production of limestone for use in agriculture, 1,020,810 tons being produced during 1947, as against 929,794 tons in 1946. Production of limestone for agricultural use for the past twenty years has been as follows :—

Year.	Tons.	Year.	Tons.
1928	182,949	1938	481,712
1929	221,756	1939	391,069
1930	204,811	1940	593,995
1931	171,159	1941	728,474
1932	201,735	1942	613,168
1933	191,888	1943	752,603
1934	261,940	1944	903,808
1935	288,559	1945	812,635
1936	317,055	1946	929,794
1937	410,770	1947	1,020,810

Dolomite.—In 1947, 7,034 tons of dolomite were produced, as against 3,893 tons in 1946. The greater part of this amount was consumed in the manufacture of soluble-slag fertilizer, but a proportion was finely ground for use as a fertilizer in the cultivation of tobacco.

Magnesite.—The production of magnesite for use as a fertilizer in the cultivation of tobacco amounted to 362 tons in 1947, as against 374 tons in 1946.

Clay for Bricks, Tiles, &c.—In 1947, 150,808 tons of clay for use in the manufacture of bricks, tiles, &c., were produced, as against 109,809 tons recorded in 1946. This substantial increase is due more to better statistical average than to actual increased production.

Clay for Pottery, Fillers, &c.—Production of clays in this class amounted to 11,970 tons in 1947, as against 9,425 tons in 1946. With increased activity in the ceramic industry and the development of the paper industry in New Zealand, production of clays of this grade will increase.

Pumice.—A total of 3,389 tons of pumice, of which 2,410 tons were exported, were produced in 1947, compared with 3,409 tons, of which 2,539 tons were exported, in 1946.

Silica Sand.—During 1947, 14,443 tons of silica sand were produced from deposits at Parengarenga, Aramoho, Hyde, Mount Somers, Pleasant Valley, and Parapara, compared with 16,949 tons obtained from the same deposits in 1946. As in previous years, the deposit at Parengarenga operated by the New Zealand Glass Manufacturers Co. Pty., Ltd., contributed the greatest proportion of this amount, 12,541 tons, a tonnage which would have been greater but for shortages in the soda-ash requirements of this firm.

Diatomite.—From deposits at Kamo, Ngongotaha, Ngakura, and Middlemarch a total quantity of 436 tons of diatomaceous earth was produced in 1947, as against 348 tons in 1946. The material is employed for concrete, plaster, and lagging work, but so far the grade that could be used for filtering purposes has not been obtainable in New Zealand.

Dimension Stone.—Stone for building or monumental work was produced to the extent of 14,528 tons during 1947, this total being made up by 122 tons of Coromandel granite, 73 tons of Bluff granite, 2,932 tons of Oamaru building-stone, 440 tons of marble from Hanmer, 148 tons of sandstone from Charteris Bay, Lyttelton, and 10,809 tons of blue stone from quarries at Christchurch, Oamaru, Balclutha, and Dunedin.

Salt.—An entirely new departure in mineral-production is at present in its initial stages at Lake Grasmere, in the Marlborough District, where it is planned to produce salt by the solar evaporation of sea-water. The low rainfall, long hours of sunlight, and the wind conditions make this locality the most suitable one in New Zealand for this purpose. The company has now about 1,200 acres of the lake area enclosed and covered with sea-water, and the intake from the sea, complete with pump-house, was completed last January. Accommodation for staff has been erected and a road of one and a half miles across the lake constructed between the company's headquarters and the intake. Samples of salt have been already collected, and possibly some salt may be harvested this year.

General.—Small amounts of quartzite and fuller's earth were produced during 1947, while there was also production in some quantity of rock for harbour-works, sand, gravel, &c., for roads and ballast, sand, &c., for building aggregate, stone dust for coal-mines, &c., and limestone for industrial uses.

GEOLOGICAL SURVEY

Regional geological survey is being carried out as far as pressure of work permits. Field-work was completed in Motatau Survey District (North Auckland), in Wanganui Subdivision, and in North Otago. It is proceeding in Punakitere Survey District (North Auckland) in the "mineral belt," Nelson, and in West Southland.

The coalfields of North Auckland, Reefton, Greymouth, Murchison, South Otago, and Southland have been under investigation continuously, and the latest information from field-work, drill-holes, and mining has been compiled, tested, mapped, and used to guide further work.

Water-supplies have been reported on at Whangarei, Auckland, Cambridge, Three Kings, Rotorua, Rangitaiki, Wairakei, North and South Canterbury, Timaru, Waikouaiti, and Southland.

Quartzite and greensand have been mapped near Paraparaumu.

Glass-sands have been sampled from Parengarenga, Helensville, and Mount Somers; bentonite and pozzolana in the Wairarapa and East Coast districts; and diatomite has been examined near Taumarunui and Hawera.

Dams, tunnels, roads, quarry-sites, &c., have been reported on for Government Departments and local bodies.

From the field geologists, Government Departments, local bodies, prospectors, &c., rocks come in continuously and are tested and reported on by the petrologists. Considerable attention has been directed to rock aggregates for cements, with reference to those liable to react injuriously.

Volcanological work has proceeded in the Rotorua-Taupo region, and investigations have been made into the utilizing of steam and hot water for heating and power purposes.

LABORATORY INVESTIGATIONS

The following is a summary of work carried out at the Dominion Laboratory during 1947 in connection with mining industries.

Evaluation of cement-making raw materials from Southland in co-operation with Geological Survey.

Survey of glass-sand deposits of New Zealand started, and investigation of methods of beneficiating them.

Experimental study of the possibility of using greensand as a flux in the fusion process of phosphatic-fertilizer manufacture.

Examination of concentrates from Taranaki and West Coast (South Island) black-sand deposits with a view to ascertaining uses for iron or pigment production.

Investigation of many clays for ceramic value, including refractory clays from North Auckland and brickmaking clays from Whangarei and Wellington.

Testing of the suitability of local diatomites for filtration use.

The usual large number of analyses of minerals and ores forwarded by prospectors and others, including assays for gold and silver and limestones for agricultural use.

Other samples included mine airs and gases, and stone dusts used in the suppression of the inflammability of coal-dusts.

As part of the survey of the Dominion coal resources, a very large number of bore core, outcrop, and mine samples were analysed.

COAL SURVEY

Coal Survey Laboratory.—During the year, 523 samples were analysed for various purposes. Nearly 60 per cent. of samples received were from drill-holes, and a further 20 per cent. were taken from outcrops for prospecting purposes. The drill-hole and outcrop samples were all taken by the Mines Department or the Geological Survey and came from the three main South Island coalfields—viz., Westport, Kaitangata, and Ohai—where the present coal areas are being actively extended.

Other investigations have covered the following: analyses of samples from open-cast or underground mines; examination of Waikato peats for wax content; analysis of coal and residue samples in connection with boiler trials; analysis of mine airs; and other substances such as briquettes, coke, shale, and petrolatum.

Coal Survey: Geological.—Field-work on the various coalfields of the Dominion has been continued, but staff shortages have severely hampered the work. Reefton and Kaitangata Coalfields were the scene of regular geological work, while drill-hole location and correlation was carried out in consultation with Mines Department at Ohai, Greymouth, and Kamo.

The lignite deposits of the Mataura Valley, Southland, were mapped, and a preliminary report prepared indicating provisional quantities and suitable drilling locations.

Among the reports issued by the Coal Survey during the year, the following geological reports were included: Paparoa reserves; Pivot Creek area, Wangaloa: drill-holes, Nightcaps-Ohai area; Wangaloa State Block and Newton River area Murchison.

DRILLING ACTIVITIES

Drilling-operations were carried out by the Department during the year ended 31st December, 1947, at Stockton; Brunner; Smoko area, Blackball; Fisher and party, Dunollie; Strongman Colliery; Dobson Colliery; Harrison and party; Wangaloa; Morley area; Mossbank area; Star area; Wilton Colliery; Wilton opencast; Kemp's opencast; Pakotai; and Kimihia.

During the year, access facilities to the isolated Mount Davy block, near Rewanui, were being constructed, and, whilst very slow progress was made, drilling should commence early in the New Year. Because of the hazardous nature of the work and the lack of communication with the men employed on the area, radio-telephone communication was installed between the base camp and the Greymouth office and helped considerably when dispatching equipment to the area.

Details of the drilling programme are as follows:—

Stockton Area.—At the latter end of the year two drills were placed on this area to do both general prospecting-work and drilling for opencast areas. One drill was employed for a short period drilling experimental holes for shooting on an opencast area with remarkably good results.

Before the general prospecting on the area adjoining Webb Mine was commenced, 1,766 ft. of shot-holes were drilled.

To the end of the year, bores B.C. 501 (197 ft.), B.C. 502 (68 ft.), B.C. 503 (118 ft.), and B.C. 504 (111 ft., not completed) were drilled, making a total of 2,260 ft. for both shot-holes and prospecting.

Brunner.—Bore 289 was completed to a depth of 1,988 ft. during the year. This bore was the third of a series in the area, and the results were such that it was decided not to proceed with drilling in this locality.

Smoko Area, Blackball.—Seven bores, numbered 296 to 302 inclusive, were drilled on this area with hand equipment, and, whilst coal was penetrated in some bores, the area was considered unsuitable for opencast working.

A total of 234 ft. was drilled.

Fisher and Party, Dunollie.—Bore 291 was drilled to a depth of 605 ft. This was the last of a series of bores endeavouring to locate an area suitable for co-operative-party working, but the results were generally disappointing, not proving a sufficiently large block of coal to justify development.

Strongman Colliery.—Underground drilling was carried out in this coal-mine for the greater part of the year, and six bores, numbered 292 (141 ft.), 294 (87 ft.), 295 (91 ft.), 303 (150 ft.), 304 (133 ft.), and 304A (153 ft.), were drilled from various parts of the workings either to prove upper and lower seams or fault throws.

Dobson Colliery.—Two bores, numbered 292 (30 ft.) and 293 (35 ft.), were drilled in this colliery to determine the throw on a fault encountered during coal-development.

Harrison and Party.—Two bores, numbered 305 (115 ft.) and 306 (65 ft., incomplete), were drilled in this party's mine to determine coal thickness in an upper seam believed to exist.

Wangaloa.—During the year a bore at Wangaloa was drilled to a depth of 834 ft., and is still proceeding, to prove whether or not the Kaitangata Series is coal-bearing in this locality. Drilling progress has been extremely slow because of the nature of the Taratu Series overlying the Kaitangata.

While drilling, the bore-hole caved in and the drilling-tools were stuck, but after much difficulty they were recovered.

Morley Area, Ohai.—Bore 14 of the series drilled on this area, which stood at 994 ft. at the beginning of the year, was drilled to and completed at 1,223 ft. This area is very encouraging and calculations of coal tonnages in the area are being made preparatory to opening up and development. Further bores may be required at a later date to determine accurately the throw on faulting revealed through the drilling results.

Mossbank, Ohai.—One bore, No. 12, was drilled to 343 ft. with the object of proving whether or not the New Brighton seam existed under this colliery, but owing to extremely slow and bad drilling-conditions this bore was stopped at the depth stated.

Star Area, Ohai.—Since the acquisition by the Mines Department of the above colliery, boring has been carried out to prove the extent of the Morley Seam on the area, and bores 15 (534 ft.), 16 (429 ft.), 17 (183 ft.), 176 (778 ft.), and 177 (588 ft.) were drilled during the year and very encouraging results were obtained, proving a considerable extension of the Morley Seam.

Wilton Colliery No. 3 Extended.—Bores 1R to 8R inclusive, with a total depth of 935 ft., were drilled at this colliery during the year to prove whether or not an area ahead of the present workings in this colliery was coal-bearing. Results were not altogether encouraging, but further drilling may be carried out at a later date.

Wilton Opencast.—At the latter end of the year a start was made to prove the extent of a likely opencast area adjacent to the Wilton No. 1 Colliery. Two bores were completed, one to a depth of 70 ft. and another to a depth of 67 ft. The area will be surveyed and drilling carried out on a definite grid so that from the results of future bores calculations of overburden and coal quantities will be made. Drilling is proceeding.

Kemp's Opencast, Glen Massey.—Seventeen bores, with a total depth of 935 ft., were drilled on this area. This drilling was necessary for the development of the area.

Kimihia Opencast Extension.—During the previous year much drilling was done on this area, and at the beginning of this year bore R7, with a depth of 74 ft., was drilled to complete the work in hand. This work was done from a barge on Lake Kimihia.

The area is now being surrounded by a stop-bank preparatory to pumping out the water and stripping-operations.

Pakotai (Copper Deposit).—From the end of October through to the end of December, twenty-five bores, with a total of 861 ft. of drilling, were carried out to prove the extent of the deposit of copper sulphide in this locality. Results were inconclusive, and it was decided to cease drilling until further field-work was completed.

COAL-MINES COUNCIL

During the year the Council has issued 110 separate decisions regarding disputes in the industry submitted for adjudication.

Generally speaking, each decision represents the findings of a visit to one particular mine, and in the majority of cases a decision will deal with the separate grievances of several individuals or groups of workers.

The volume of work involved is therefore considerable and much time is also taken up in travelling to and from the various coalfields.

I take the opportunity of thanking the members of the Council for their valuable service during the year.

SCHOOLS OF MINES

The expenditure on Schools of Mines for the year ended 31st March, 1948, was £4,884, as against £5,099 for the year ended 31st March, 1947. Two candidates obtained scholarships at the annual examination, and another candidate who is taking the examination in sections obtained a partial pass. All the scholarship entries were from the Otago University School of Mines.

The provision of an adequate and continuous supply of qualified managers to the coal-mining industry, particularly in view of the new problems created by the increasing mechanization of the industry, is a question that has been exercising responsible members of that industry in every part of the world.

It has become increasingly apparent that modern conditions call for more highly trained managers than was considered necessary in the past.

The question of mining education generally has been reviewed at some length by the Mines Department during the past year and it is expected that discussions on this important subject will take place at an early date with other interested bodies.

RESCUE STATIONS

The new station at Granity came into use on 30th September, and the stations at Dobson, Ohai, and Rotowaro were in full operation throughout the year.

The numbers of trained men on the station registers are :—

	Previously trained.	Trained during 1947.	Totals.
Dobson	71	17	88
Granity	..	14	14
Ohai	19	11	30
Rotowaro	74	12	86
Totals	164	54	218

The services of trained teams were frequently asked for by mine-managers to deal with heatings and fires and to carry out examinations when sealed-off areas were broken open.

During the year emergency calls dealt with were : Dobson, 5 ; Ohai, 7 ; Rotowaro, 15 ; Granity, nil. Although conditions were often potentially dangerous, the trained teams equipped with the rescue apparatus were able to deal with all these emergencies without mishap. On several occasions the work resulted in a saving of both coal and mining plant.

In addition to training new personnel, refresher courses were conducted for trained men at all stations excepting Granity. The organization was extended by the establishment of a subsidiary station at Benneydale, where five sets of Proto apparatus are now held to facilitate training of teams and also to ensure that immediate attention is given to the heatings which are experienced at the Mangapehi Mine. It is intended to establish a similar subsidiary station at Reefton.

HOUSING

During the financial year 1947–48, housing loans were granted to twenty-two employees to a total amount of £15,735.

Eleven loans were for the construction of new houses and eleven for the purchase of existing houses. The locations of the houses are : Runanga, 3 ; Dunollie, 2 ; Rapahoe, 1 ; Blackball, 1 ; Hector, 3 ; Ngakawau, 1 ; Stockton, 3 ; Granity, 1 ; Ohura, 1 ; Ngaruawahia, 6.

The following table gives details of loans granted for the last ten years :—

Year ended.	Erection of New Houses.		Purchase of Existing Houses.		Repairs and Renovations.		Total.	
	Number.	Amount.	Number.	Amount.	Number.	Amount.	Number.	Amount.
		£		£		£		£
31/3/39 ..	8	3,830	1	250	3	788	12	4,868
31/3/40 ..	9	5,225	..	..	1	250	10	5,475
31/3/41 ..	16	10,221	..	..	3	909	19	11,130
31/3/42 ..	14	9,088	..	..	1	120	15	9,208
31/3/43 ..	6	5,500	11	6,230	1	495	18	12,225
31/3/44 ..	10	10,335	15	6,788	3	1,025	28	18,148
31/3/45 ..	4	4,549	7	3,925	1	395	12	8,869
31/3/46 ..	2	2,000	7	2,748	2	560	11	5,308
31/3/47 ..	3	4,160	14	7,195	6	1,062	23	12,417
31/3/48 ..	11	11,380	11	4,355	..	..	22	15,735

COAL MINERS' RELIEF FUND

Section 4 of the Coal-mines Amendment Act, 1947, increased the levy by which the fund is financed from ½d. to 1d. per ton. This rise was made necessary by the imminent exhaustion of the fund, and during the current year it was also necessary for the State coal-mines to pay £1,000 in levies slightly in advance of the due date so that the current outgoings could be met.

Receipts for the year ended 31st March, 1948, were £5,749 13s. 6d., and expenditure for the year was £7,055 14s. 10d.

Interest earned amounted to £18 1s. 5d., and the balance standing to the credit of the fund on 31st March, 1948, was £553 19s. 8d.

At the end of last year the figures were: receipts, £6,212; expenditure, £8,299; interest, £78; balance as at 31st March, 1947, £1,841.

From now on the fund will receive the full benefit of the increased levy and the financial position can be expected to improve.

SOCIAL AMENITIES

During the financial year 1947–48 the sum of £3,081 was expended on providing social amenities for mining townships.

As in past years, the programme is handicapped by the general difficulties of the building industry. Wherever man-power and materials permit, the conditions in the mining communities will continue to be improved.

ASSISTANCE TO MINING

Subsidies and loans to the mining industry during the year ended 31st March, 1948, amounted to £6,113 8s. 7d. Details were :—

	£	s.	d.
Coal-mining	2,786	6	0
Scheelite-mining	516	7	6
Gold-mining	2,000	10	0
Sludge-channel maintenance	48	16	3
Recovery of pipe-lines	511	8	10
Copper prospecting	250	0	0
	£6,113	8	7

MINERS' BENEFITS

The provision for payment of a miner's benefit is contained in the Social Security Act, 1938, which came into operation on 1st April, 1939. One of the necessary qualifications is that the applicant should be seriously and permanently incapacitated by miners' phthisis or totally and permanently incapacitated by heart or other occupational disease associated with mining service in New Zealand.

The rate of benefit for a miner is £117 per annum, increased in the case of a married beneficiary by £117 per annum for the wife. The widow of a miner who died while in receipt of a miner's benefit may be granted a benefit of £91 per annum during widowhood.

These increased rates were effective from the coming into operation of the Social Security Amendment Act, 1947, on 1st October, 1947.

This scheme, which originated with the Miners' Phthisis Act, 1915, is administered by the Social Security Commission, and the following is a summary of the operatons for the year ended 31st March, 1948 :—

	£
Payments from 1st November, 1915, to 31st March, 1947 ..	1,768,442
Payments from 1st April, 1947, to 31st March, 1948	110,106
	£1,878,548

Number of new grants for the year 1947–48—	
Males	24
Females	5
	29
Number of benefits in force at 31st March, 1948—	
Males	604
Females	81
	685
Annual value of benefits in force at 31st March, 1948	£111,518
Dissection of benefits in force at 31st March, 1948—	
Single miners	292
Married miners	312
Widows	81
	685

MEN EMPLOYED IN MINING AND QUARRYING

The table shows the numbers of men employed in each inspection district during 1947 and 1946 :—

	Inspection District.			Totals.	
	Northern (North Island).	West Coast (South Island).	Southern (South Island).	1947.	1946.
Gold, silver, and scheelite ..	492	527	172	1,191	1,166
Coal	2,086	2,408	948	5,442	5,557
Bentonite	4	..	..	4	
Clays	54	11	54	119	
Diatomite	2	..	..	2	
Dolomite	..	7	..	7	
Fuller's earth	1	..	..	1	
Iron-ore	17	..	..	17	
Limestone	243	83	295	621	1,960
Magnesite	..	3	..	3	
Pumice	10	..	..	10	
Quartzite	..	3	..	3	
Rock, sand, &c.	1,018	50	293	1,361	
Serpentine	6	..	2	8	
Silica sand	5	..	4	9	
Totals	3,938	3,092	1,768	8,798	8,683

MINING AND QUARRY ACCIDENTS

Fatal and serious accidents in the mining industry during the year 1947 were :—

	Men Killed.	Men Seriously Injured.	Men Ordinarily Employed.
Coal-mines	4	41	5,442
Metal mines	2	5	1,191
Quarries	5	2	2,165
Totals	11	48	8,798

MINING PRIVILEGES

The following table shows the numbers and descriptions of mining privileges granted through the Warden's Court during 1947, 1946, and 1945 :—

	1947.	1946.	1945.
Claims	30	23	19
Prospecting licences	62	83	89
Water rights	38	22	18
Residence sites	56	29	26
Mineral licences	7	8	8
Miscellaneous	13	10	1
Totals	206	175	161

LEGISLATION

The Coal-mines Amendment Act, 1947, contains provisions concerning the exchange of coal-prospecting licences for coal leases, the right to compensation for injury or death, and the rate of payment of contributions to the Coal-miners' Relief Fund.

The Mining Amendment Act, 1947, amended the provisions for granting amalgamated claims, and contains a section regarding damages for injury or death similar to the Coal-mines Amendment Act, 1947.

APPENDICES TO THE MINES STATEMENT

APPENDIX A

REPORTS RELATING TO METALLIFEROUS MINES AND QUARRIES

The INSPECTING ENGINEER OF MINES to the UNDER-SECRETARY OF MINES.

Wellington, 5th July, 1948.

SIR,—

I have the honour to present my report on metalliferous mines and quarries for the year ended 31st December, 1947.

ACCIDENTS

During 1947 two fatal and five non-fatal serious accidents occurred in or about metalliferous mines, at which 1,191 persons were employed.

One fatality occurred in the Southern District, a shift foreman on a dredge being caught between the stacker terminal pulley and the casing, while the other was in the Northern District, being due to a surveyor at the Martha Mine falling 300 ft. down a shaft.

The five serious non-fatal accidents all happened in the West Coast District, three being on dredges and two at the Blackwater Mine.

QUARTZ-MINES

Blackwater Mine continued development of the fifteenth and sixteenth Levels South and of the sixteenth Level North with good results, the southern extension of the sixteenth Level being particularly satisfactory. In order to maintain ore reserves, the sinking of the North Shaft to No. 17 Level will be necessary in the near future. Development during the year has again been hindered by the shortage of skilled miners.

Martha Mine.—Considerable secondary development work was carried out during the year in the reopening of old workings and the driving of sub-levels. The output of 108,747 tons was obtained from the Martha, Empire, Welcome, Royal, and Dreadnought Lodes. In spite of a shortage of skilled men still operating, output and values produced showed no decrease on the previous year.

Several small quartz-mines still continue to work in the Southern and Northern Districts, while a small amount of prospecting is being done. During the year no new area of value was proved.

	Ore.	Development.	Men employed.	Gold.	Silver.	Value.
Northern District—	Tons.	Feet.		Oz.	Oz.	£(N.Z.)
Martha	108,747	4,622	481	28,983	220,169	363,966
Golden Dawn	..	..	1	36	43	393
Golden Spur	..	..	1	..	16	9
Charlton's Kuaotunu	..	..	2	13	13	131
Kernick's Tapu	..	..	1	3	1	29
Prospectors	..	..	6	..	..	..
Totals	..	..	492	29,035	220,242	364,528
West Coast District—						
Blackwater	22,915	1,838	134	8,168	..	87,248
Southern District—						
Callery Party	1,052	..	4	226	..	2,441
Mount Aurum Syndicate ..	112	..	2	67	..	607
Totals	1,164	..	6	293	..	3,048

ALLUVIAL MINES

In the West Coast District the Addison's Flat Gold-mining Co., Ltd., closed down after working during the first few weeks of the year, the company going into voluntary liquidation.

Three alluvial mines in the West Coast District and one in the Southern District worked throughout the year, while the Waikakaho Deep Lead, in Marlborough County, succeeded in pumping out their shaft and attempted some crosscutting to reach the lead, but these operations have now been closed down.

	Yardage.	Average Depth.	Men employed.	Gold.	Value.
West Coast District—		Feet.		Oz.	£(N.Z.)
Addison's Flat	18,300	7	2	45	457
Waitahu	..	20	4	304	3,274
Moonlight	..	175	3	254	2,604
Golden Sands	..	40	3	257	2,413
Sundry	..	..	118	793	8,127
Totals	..	..	130	1,653	16,875
Southern District—					
Round Hill	..	..	6	460	4,749
Sundry	..	..	58	1,120	11,603
Totals	..	..	64	1,580	16,352

DREDGES

Thirteen dredges worked throughout the year, ten in the West Coast District and three in the Southern Inspection District.

In addition, the Redjacks dredge (Associated Gold Dredges, Ltd.) operated at Ngahere, West Coast, until August, when the dredge closed down owing to the exhaustion of all available ground within its capacity.

The Blackball Creek dredge also ceased operations early in the year. This dredge has been dismantled during the year.

In the Southern District the Molyneaux dredge, Kawarau River, remained idle throughout the year.

	Yardage.	Acreage.	Average Depth.	Men employed.	Gold.	Silver.	Value.
West Coast District—			Feet.		Oz.	Oz.	£(N.Z.)
Grey River	3,741,732	78·352	29·6	27	13,476	374	154,738
Kanieri	2,908,000	23·441	76·9	44	6,775	255	72,600
Ngahere	2,023,690	16·245	77·2	26	4,741	26	49,017
Rimu	1,917,013	26·619	44·6	39	9,594	298	109,577
Snowy River	715,000	24·620	18·0	14	3,890	..	38,256
Marsden	1,425,348	33·000	30·5	12	1,872	..	19,282
Atarau	1,337,148	25·000	24·5	12	2,052	..	21,206
Redjacks	554,083	14·000	22·5	16	828	..	8,731
Blackball Creek	..	..	35·0	10	300	..	3,000
Slab Hut Creek	539,050	15·190	22·0	12	862	..	8,686
Callaghan's	130,000	3·500	23·0	9	492	..	4,750
Arahura	3,157,000	22·030	88·8	42	11,397	390	122,116
Totals	18,448,064	..	..	263	56,279	1,343	611,959
Southern District—							
Austral N.Z.	3,359,000	44·666	46·6	52	8,275	399	89,132
Clutha	2,522,000	26·500	78·0	24	6,761	..	73,064
Rainbow	..	..	5·0	2	216	..	2,171
Totals	5,881,000	..	..	78	15,252	399	164,367

PRODUCTION OF METALS (OTHER THAN GOLD AND SILVER)

	Men employed.	Quantity.	Value.
		Tons.	£(N.Z.)
Tungsten-ore	24	22	10,500
Copper-ore	..	580	6,255
Iron-ore	17	6,226	13,841
Arsenic	..	8	143
Totals	41	..	30,739

QUARRY ACCIDENTS

Cause.	Number of Accidents.		Number of Men.	
	Fatal.	Serious.	Killed.	Seriously injured.
Falls from face	1	..	1	..
Falls of ground	3	2	3	2
Miscellaneous	1	..	1	..
Totals	5	2	5	2

Five fatal and two serious accidents occurred in New Zealand quarries during 1947. Two fatalities took place in the Southern District and three in the Northern. All the accidents were reported on, after investigation, by the Inspector of Quarries, but two of the fatalities in the Northern District happened in quarries which are not subject to inspection by Mines Department Inspectors.

Three of the fatalities were due to falls of ground and one due to a worker falling from a high place. Attention is again directed to the need for constant supervision of quarry faces by experienced men and the use of safety ropes and belts by every one working on the quarry face.

QUARRY OUTPUTS

	Northern.		Hauraki.		West Coast.		Southern.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.	£(N.Z.)	Tons.	£(N.Z.)	Tons.	(£N.Z.)	Tons.	£(N.Z.)
Bentonite	215	1,049	..	..	..	..	..	..
Clay for bricks, &c.	92,443	13,410	3,436	1,051	2,500	803	52,429	18,629
Clay for pottery, &c.	..	..	1,353	1,791	778	838	9,839	7,341
Diatomite	..	..	204	401	..	..	232	308
Dolomite	..	..	..	..	7,034	3,517	..	..
Fuller's earth	..	..	31	120	..	..	..	..
Limestone for cement	256,047	41,457	..	..	60,936	6,630	82,352	25,682
Limestone for agriculture	364,827	153,774	..	..	44,656	14,146	611,327	239,839
Limestone for industry	5,475	2,664	..	..	2,683	1,073	10,243	3,122
Magnesite	..	..	..	..	362	253	..	..
Phosphate	..	..	..	..	..	..	200	100
Pumice	3,389	2,635	..	..	..	..	..	..
Quartzite	..	..	..	..	13	33	..	..
Rock for harbour-works	..	..	..	..	..	..	41,347	6,451
Sand, gravel, &c., for roads and ballast	973,061	287,020	211,168	80,816	11,881	1,933	421,843	108,539
Sand, &c., for building aggregate	214,634	66,721	..	..	..	..	160,801	70,402
Serpentine	28,639	6,859	..	..	..	..	3,296	4,944
Silica sand	12,541	28,217	..	..	145	145	1,757	1,996
Stone dust for coal-mines	..	..	..	..	914	174	384	96
Dimension stone for building	..	..	122	549	..	..	14,406	10,594
Totals	..	603,806	..	84,728	..	29,545	..	498,043

Number of men employed: Northern, 1,127; Hauraki, 216; West Coast, 157; Southern, 648; total, 2,148.

STATE AID TO MINING

Subsidized Prospecting

A total amount of £6,113 was advanced during the financial year 1947–48 to the mining industry in the form of subsidies, loans, &c.

The Mines Department expended £27,093 in surveying, prospecting, and developing areas.

Government Drills

Mines Department drills were fully employed throughout the year in operations on the Buller, Grey, Kaitangata, Ohai, and Waikato Coalfields. No drills were available for hire to private operators.

Subsidized Roads

The expenditure on subsidies for the maintenance and construction of roads in mining areas during the financial year 1947–48 was £3,476. The expenditure for the previous year was £7,015.

I have, &c.,

R. H. Schoen,
Inspecting Engineer of Mines.

ANNEXURE A

SUMMARY OF REPORTS BY INSPECTORS OF MINES

NORTHERN INSPECTION DISTRICT (E. J. SCOBLE, Inspector of Mines)

QUARTZ-MINING

Martha Gold-mining Co. (Waihi), Ltd. (K. A. Birchall, Manager).—The ore won for the period amounted to 108,747 tons, which, after treatment, gave a return of 28,983 oz. of gold and 220,169 oz. of silver, worth £363,966. The heading value of the ore per ton was, gold 5 dwt. 4 gr., and silver 2 oz. 3 dwt. 4 gr., the extraction per ton, based on assay, being gold 93 per cent., silver 80·3 per cent., and value 90·9 per cent. The ore was got chiefly from the Martha, Empire, Welcome, Royal, and Dreadnought Lodes, as in the past. Development work was of a secondary nature, and consisted of the reopening of old workings and the establishment of sub-levels, and amounted to 4,038 ft. of driving and crosscutting and 584 ft. of winzing and rising, total 4,622 ft. A second Gardener-Denver mechanical loader was put into operation during the year, and has proved satisfactory in every way. Water raised to the surface amounted to 347,485,000 gallons, all coming from below No. 12 Mine level. The sum paid in dividends was £12,398. The number of men employed averaged 481, which shows a reduction of 154 when compared with 1939 (pre-war) figures, and this is naturally reflected in the tonnage won and yield of bullion.

Golden Dawn Gold-mines, Ltd., Owharoa.—Some 20 tons of battery residues were treated, and gave a return of 35½ oz. of gold and 43 oz. of silver, valued at £392 17s. 10d. The treatment was undertaken by the Martha Co.

Golden Spur Co., Maratoto.—This concern won 16 oz. 15 dwt. of bullion, worth £9, the fineness of the gold being only 0·044.

Charlton's Claim, Kuaotunu.—From the treatment of old tailings on the Try Fluke area, P. Charlton produced 12 oz. 12 dwt. of gold and 13 oz. 2 dwt. of silver, which realized the sum of £131 1s. 6d. Considerable difficulty, chiefly of a chemical nature, was experienced in the extraction of values, but this seems to have been overcome, and as an outcome recoveries should in future conform with assay figures. The tailings probably average £2 per ton in value, and there must be several thousand tons available. Two men are employed.

PROSPECTING

Karangahake.—R. Schulzki and mate continued to prospect in the vicinity of the old Dubbo Mine, but did not find anything of real worth. Gaghan and Thomson were engaged in reconditioning No. 11 Level, old Talisman Mine, and uncovered a small block of medium-valued ore as a result of their work. It is their intention to look for more promising stone before erecting crushing plant. Haszard and Fallon drilled a deposit of old tailings at Mackaytown, and proved the existence of a large quantity at about £1 3s. per ton. Several trail bulk parcels were tested and a considerable amount of laboratory work was done, and it is thought that profitable returns can be got from the material. The tailings, which are coarse and pyritous, contain both gold and silver, and recoveries of only 50 per cent. and 60 per cent. respectively can be anticipated, unless fine grinding be resorted to. Prospecting in other parts of the district was negligible.

METALLIC ORES

Copper.—Cloudesley Mine, Pakotai, North Auckland (W. S. Miller, Owner): The trial shipment forwarded to Port Kembla, New South Wales, as referred to in last report, gave a gross return of £6,255 and a net return of £3,944 13s. 4d. The ore contained, on assay, 59·8 tons of copper, 89·87 oz. of gold, and 880·28 oz. of silver. In order to test the area to a greater extent, twenty-five holes were drilled during the last two months of the year, but results did not come up to expectations. The bores ranged in depth from 10 ft. to 51 ft. and averaged 34 ft. They were sunk with a Porta drill.

Limonite.—A total of 5,826 tons, worth £13,641, was produced by Okaihau Quarries, Ltd., W. Whitelaw, and Reyburn's Lime Co., Ltd., in the Noth Auckland District. It was used for cattle-licks, the filtering of gas, as a fusing agent in the making of cement, and for top-dressing in agriculture. The average number of men employed was 17.

Manganese.—Mirandite Products, Ltd., Otau, Clevedon. (G. M. Maning, Lessee): A total of 330 tons of ore was produced and transported to Papatoetoe, where it is held pending the winning of an additional 170 tons, when the parcel will be shipped to the Broken Hill Pty. Steelworks, Newcastle. The value of same is estimated at £4 10s. per ton. The road to the deposit is rough and cuts up badly in wet weather, and this affects transport. Difficulty is also experienced in getting the ore shipped to Australia. One man was employed.

MISCELLANEOUS MINERALS (NON-METALLICS)

Bentonite.—This was all won by H. F. Stoddart, Porangahau, and comprised 215 tons, the value being £1,048. It is used for a great variety of purposes, ranging from cement-work to face-powders. Four men were employed.

Clay (Brickmaking).—Kamo Potteries, Ltd., produced 1,506 tons of alumina, worth £571, which was used for the manufacture of firebricks for furnaces. In addition, this company and the Amalgamated Brick and Pipe Co., Ltd., obtained 1,930 tons of clay, worth £480, for ordinary brick-making. About 5 men were employed.

Diatomaceous Earth.—There were three contributors—namely, Messrs. S. C. Crawford, Kamo; W. Brake, Ngongotaha; and Clays and Minerals (a Wellington syndicate operating at Ngakura, Rotorua)—who obtained 204 tons, worth £401. The material is employed for concrete, plaster, and lagging work, and for the manufacture of soda-lime as used in mine-rescue apparatus.

Fuller's Earth.—Some 31 tons, valued at £120 2s. 6d., were produced by S. C. Crawford at Kamo. It is used for clarifying fats and oils, and as a filtering agent in the manufacture of glycerine.

Kaolin.—N.Z. Mercury Mines, Ltd., and Messrs. J. J. Craig, Ltd., produced 408 tons and 945 tons, valued at £1,326 and £464 respectively. The clay was got at Puhipuhi and McLeod's Bay, Whangarei, and was utilized in the manufacture of pottery. Five men were employed. The Ohio Kaolin Co. (N.Z.), Ltd., recently formed, commenced operations towards the end of the year on an extensive deposit of clay situated in Blocks I, II, IV, and V, Thames Survey District, but has so far placed nothing on the market. The deposit is located in very hilly country about four miles from Thames Township. The clay is derived from altered andesites and containes 10 per cent. of iron pyrites, which carries from 2 dwt. to 11 dwt. of gold and up to 14 oz. of silver per ton of pyrites. The intentions are to extract this by means of Wilfley tables and flotation, then again float and separate the remaining silica and alumina. Inquiries for the processed material (alumina chiefly) are numerous enough, and it is anticipated, once the initial or experimental stages of work have been passed, that a considerable tonnage monthly will be produced and a fair number of men employed. An analysis of the clay gives its contents as, silica 51·80 per cent., alumina 33·17 per cent., organic matter 8·85 per cent., with a small quantity of magnesia, calcium, and other minerals. The silica is required by the silicon industry, and the alumina by rubber-manufacturers and for medicinal preparations. Two men were employed.

Pumice.—Approximately 773 tons, valued at £270, were dug from the property of I. Lowe near the west bank of the Wanganui River, Aramoho, by A. F. Nicholson It was processed and used for making wallboard.

Serpentine.—This was all got at Kaukapakapa, and Piopio, near Te Kuiti, on behalf of Asbesto Mines (N.Z.), Ltd., Wellington, and amounted to some 28,639 tons, worth £6,858. It is an important constituent of the well-known serpentine-super. The average number of men employed was 6.

Silica.—Messrs. Gilbert and Son, Wanganui, mined 375 tons, valued at £168 15s., from their area at Aramoho. Part was exported, and the remainder used in the manufacture of sand-soap. The silica is fine grained and of pumiceous origin.

Some 30 tons, worth £75, were won by A. C. Tucker, Aramoho. Two men were employed.

Silica Sand.—The N.Z. Glass Manufacturers Co. Pty., Ltd., Penrose, produced 12,541 tons from its deposit at Parengarenga. The material is used for making glassware of all descriptions, and was valued at £28,217. Five men were employed.

Petroleum.—The Moturoa Oil Wells, New Plymouth, were the only source of this commodity, which amounted to 82,307 gallons, made up as follows:—

	Gallons.
No. 1 well	4,774
No. 2 well	46,605
No. 4 well	30,438

The fractions stilled were:—

	Gallons.
Petrol	15,875
Distillate	5,735
Power kerosene	10,460
Heavy kerosene	13,485
Diesel oil	16,580
Residue	16,170
Total	78,305
Loss	4,320
Crude through still	82,625

Quarries

The total production of stone, gravel, and sand for road and concrete work from this district, which comprises the Hauraki, Bay of Plenty, Rotorua, and part of Hawke's Bay areas, was 211,168 tons. The amount used for concrete aggregate in round figures, was 17,000 tons, valued at £8,000. In addition, 122 tons, worth £549, were produced at Colville and used for building and monumental masonry. The average number of men employed was 203.

Accidents

There was one fatility, but, that apart, there were no accidents worthy of being placed on record in either mines or quarries. The victim of the fatality was W. R. Carnachan, surveyor, employed by the Martha Gold Mining Co., who met his death by falling from No. 7 Level, No. 7 Shaft, for a distance of 300 ft. in the company's mine on the 6th October. There were no witnesses of the occurrence though it was known he was on the Level. His body was discovered by the chamberman, who descended the shaft in answer to a telephone call received previously from Carnachan in order to convey him to the surface. The coroner's verdict at the inquest held subsequent to the fatality was that deceased fell down the Martha Co.'s No. 7 Shaft, the cause of death being injury to the base of the brain, no blame being attachable to any person.

Prosecutions

Nil.

WEST COAST INSPECTION DISTRICT (G. W. Lowes, Inspector of Mines)

Quartz-mining

Inangahua County

Blackwater Mine, Waiuta.—This mine operated continuously throughout the year, except for short periods of stoppage due to holidays and shaft repairs. Employing an average of 134 men, 22,915 tons were won from stopes and development which, when treated, yielded 8,167 oz. 15 dwt. 11 gr. fine gold from all sources which realized £87,248 0s. 5d., these figures being a slight increase on previous year's return both in tonnage and yield. The total footage advanced during the year was 1,838½ ft., of which 1,147 ft. were driving. These figures compare with 1,711½ ft. and 1,105½ ft. respectively for the year 1946. Of the 1,147 ft. of driving, 802 ft., equivalent to nearly 70 per cent., were on pay reef averaging 13·43 dwt. over a width of 31 in. A footage of 164½ ft. of rising above Nos. 15 and 16 Levels was completed with 152½ ft. on reef averaging 21·9 in. in width and 13·62 dwt. in value, only 12 ft. being off reef. Winze-sinking below Nos. 14 and 15 Levels accounted for a footage of 229 ft. of development, 222 ft. being on payable reef of an average width of 28·5 in. and average value of 14·22 dwt. with 7 ft. off reef.

In addition, 298 ft. of crosscutting were completed, chiefly on the two lower levels, in search of faulted portions of the lode and construction of sidings in No. 16 Level to utilize the locomotive haulage to its greatest possible extent. Results obtained from the main development points were as follows:—

No. 15 Level Drive South: This drive was advanced 147 ft., all of which was on reef averaging 17·4 dwt. over 43 in.

No. 16 Level Drive North: This drive was advanced 316 ft., of which 129 ft. disclosed reef averaging 15·55 dwt. over a width of 19 in. The reef in this drive disclosed more than the usual amount of faulting, which necessitated a good deal of driving in country rock.

No. 16 Level Drive South: This drive was advanced 574 ft., of which no less than 497 ft. exposed reef averaging 11·34 dwt. over a width of 31 in. This result, coming from the bottom level of the mine, was highly satisfactory.

North and South Shafts: No sinking was carried out in either of the two main shafts. A considerable amount of maintenance work was carried out in both shafts, and sinking of the former to No. 17 Level will have to be carried out in 1948 if ore reserves are to be maintained.

No improvement in the situation regarding skilled labour was experienced, consequently development footage was much below that required to keep pace with the mill to its full working capacity, and production is frequently slowed down on account of having to take men from producing stopes to effect urgent and necessary repairs on main roads and air courses.

Dredge Mining

Inangahua County

Slab Hut Dredge, Mawheraiti.—Owing to an extremely low rainfall in this district during the early months of the year, this dredge was idle for a considerable time. A decreased yardage was dug and a proportionately lesser amount of gold recovered. Yardage treated was 539,050 cubic yards for a recovery of 862 oz. fine gold, which realized £8,686. Ground worked during the period varied in

depth from 16 ft. to 23 ft. of relatively easy digging material, and for several weeks part of the cut had to be taken through the old Slab Hut Dredge tailings, which barely yielded working-expenses. A crew of 12 men and dredgemaster furnished all labour ashore and afloat to keep the dredge operating on three shifts daily.

Snowy River Dredge, Ikamatua.—This dredge operated continuously during the year, chiefly on a cut on the north-east side of the valley and adjacent to the terrace, which accounted for the shallower depth of ground and slightly decreased yardage compared with the previous year. Depths varied from 13 ft. to 20 ft., and approximately 715,000 cubic yards of ground were dug and treated, which yielded 3,890 oz. of fine gold, which realized £38,256, thereby enabling a dividend of £10,500 to be paid, making a total of £101,500 paid in dividends since the dredge commenced operations.

Grey River Dredge, Ikamatua.—The following figures are relative to the company's operations, which worked continuously during the period under review:—

Working-days	310
Working-hours	7,440
Hours digging	6,129
Percentum time digging	82·4
Area dug, in acres	78·352
Average depth, in feet	29·6
Cubic yards handled	3,741,732
Cubic yards handled per day	12,070
Cubic yards handled per digging-hour	610
Ounces of bullion produced (crude ounces)	14,012·87
Value of product	£154,738
Value of product per day	£499
Value of product per cubic yard	9·93d.
Operating-cost per cubic yard (excluding export taxes and realization costs)	3·35d.
Total operating-costs per cubic yard (including export taxes, realization costs, and overhead)	4·39d.

In addition, 373 fine oz. of silver were produced, valued at £82.

Operations throughout the year were normal.

Grey County

Redjacks Dredge (Associated Gold-dredges, Ltd.), Redjacks Creek, Ngahere.—This dredge worked 2,957 hours, which was 76·8 per cent. of the possible working-time, before closing down in August after exhausting all the available ground within the capacity of the dredge. A considerable amount of deep ground remained to be dredged, but was below the 40 ft. level, which was the limit of the ladder. Fourteen acres of ground of an average depth of 22½ ft. were worked from which a yardage of 554,083 cubic yards was dug averaging 0·754 grains per cubic yard, from which 827·9 oz. fine gold were recovered, which realized £8,731 4s. 1d. The amount of 3·94d. per cubic yard was absorbed in working-expenses for a recovery of 0·754 grains of gold per cubic yard. Sixteen men were employed by the company, including the workshops complement, several of these men servicing the three dredges operated by this company.

Atarau Dredge (Associated Gold-dredges, Ltd.), Moonlight Creek, Atarau.—The digging of 1,337,148 cubic yards in 77·5 per cent. of possible dredging-time was accomplished during the year from ground averaging 24½ ft. in depth, an area of 25 acres being dug. Grains recovered per cubic yard amounted to 0·753 and the total gold recovered was 2,052·3 fine oz., which realized £21,205 11s. 3d., at a cost of 4·04d. per cubic yard. Twelve men were employed.

Marsden Dredge (Associated Gold-dredges, Ltd.), New River, Marsden.—The digging of 1,425,348 cubic yards from a turnover of 33 acres occupied 75·9 per cent. of the possible working-time of 7,272 hours. The recovery per cubic yard in grains was 0·661, and total operating-costs, excluding gold charges, was 3·07d. Gold recovered in fine ounces amounted to 1,871 oz. from ground averaging 30½ ft. in depth. A crew of 12 men and dredgemaster accounted for the above yardage and quantity of gold recovered.

Ngahere Dredge, Ngahere.—This dredge dug 2,023,690 cubic yards by operating 67·87 per cent. of the possible working-time of 7,288 hours, and turned over 16·245 acres with a bucket efficiency of 47·02 per cent. from which was recovered 4,740·4 oz. fine gold, valued at £49,012 2s. 1d. Silver was also produced amounting to 26·31 fine oz., valued at £4 13s. 7d. The maximum digging depth was 89 ft. and the minimum 68·5 ft., with an average of 77·2 ft. The maximum height above water-level was 30 ft. and the maximum depth below water-level was 77 ft. The average number of men employed during the year was 26.

During the year the dredge experienced a considerable amount of broken time for various reasons. The most serious stoppage was caused by the moving of the pivot-shaft bearing, but an excellent job was made of the repair and further trouble from this part of the dredge is not anticipated. The bucket line was relipped, lower tumblers changed, and ladder hoist lines renewed. All absorbed a considerable amount of unproductive effort.

Blackball Creek Dredge, Blackball.—Early in the year this dredge ceased operations and produced 300 fine oz. of gold, valued at £3,000, before the buckets were finally stopped. The dredge since commencing operations has produced gold to the value of £145,785 and paid dividends amounting to £23,400 on a modest capital. Dismantling of the dredge commenced immediately after the last clean-up, and it is understood that a great part of the plant and fittings has been sold at a satisfactory price.

Barrytown Dredge, Barrytown.—Dismantling of this dredge was completed and it is now ready for transhipment to its future destination, which has not yet been decided.

Westland County

Maori Gold-dredge, Callaghans.—Dredging operations were carried on intermittently during the year, the chief hindrance to continuous working being shortage of water during the early part of the year and the worn condition of bucket line. A total of 130,000 cubic yards of dirt, which yielded 492 oz. 6 dwt. 9 gr. fine gold, which realized £4,750 6s. 8d., were dredged from ground varying from 20 ft. to 25 ft. deep. The wash dirt was covered by a heavy layer of tough clay which rested on a cemented-gravel bottom that was difficult to dig and clean up. Nine men were kept in continuous employment, and the Westland Power Board staff serviced as required the electrical plant and power lines.

Rimu Dredge, Rimu.—This dredge worked 78·5 per cent. of the possible working-days of 304 and dug 1,917,013 cubic yards from 26·619 acres, which yielded 9,594·1 fine oz. gold, which realized £109,510, and 297·8 fine oz. silver, valued at £67. The normal turnover per day was 6,306 cubic yards and value of product was £360. The ground treated throughout the year averaged 13·72d. and the all-in costs were 8·48d., these including export taxes and realization costs. Thirty-nine men were kept in constant employment in operating the dredge, maintaining water-race, operating Kanieri power plant, and workshops. The only stoppage during the year was one of three weeks' duration due to power failure resulting from damage to fluming conveying water to the power-station.

Kanieri Dredge (Gold-mines (N.Z.), Ltd.), Kanieri.—This company during the year operated under somewhat difficult conditions on account of encountering a bed of quicksand overlying the wash and dredged 23·441 acres by working 75·59 per cent. out of 7,288 possible working-hours. Yardage treated was 2,908,000 cubic yards in addition to 7,612 cubic yards of tailings that had to be dug to complete the cut in payable ground. From this yardage 6,775 fine oz. 1 dwt. 19 gr. were recovered, which realized £72,554 1s. 9d., also 255 fine oz. 4 dwt. silver, valued at £45 16s. 11d. From an average depth of 76·9 ft. a recovery of 1·17 gr. per cubic yard was effected. A staff of 44 men ashore and afloat were employed by the company.

Arahura Dredge (Gold-mines (N.Z.), Ltd.), Arahura.—From ground averaging 88·8 ft. in depth the company recovered 11,396 oz. 12 dwt. 19 gr. fine gold, which realized £122,046 1s. 2d., also 389 oz. 19 dwt. fine silver, valued at £69 15s. 10d., from 3,157,000 cubic yards dug over 22·03 acres. Altogether, 79·5 per cent. was worked of the possible working-time of 7,288 hours. The ground treated yielded 1·8 gr. per cubic yard, which is somewhat lower than the usual run of values, due to dredging several acres of low-grade ground in order to reach a much more profitable area ahead of the dredge.

ALLUVIAL MINING

Buller County

Addison's Flat Gold-mining Co., Ltd., Addison's Flat.—This company operated for only a few weeks at the beginning of the year and then closed down after treating 18,300 cubic yards for a return of 44 oz. 17 dwt. fine gold, valued at £457 3s.

Operations were terminated on a long length of 7 ft. face averaging 5 ft. of clayey silt overburden covering a 2 ft. layer of wash consisting of cemented pebbles and blacksand. Since the commencement of operations gold to the value of £62,286 has been won and £8,970 paid in dividends from the lowest-grade ground in the district. The successful working of this claim is attributed to good management, a first-class water-supply, and continuous operations for twenty-four hours daily. When it became impossible to keep the water-supply in continuous use and treat a large yardage monthly, the margin of profit disappeared, and the company has gone into voluntary liquidation.

Inangahua County

Waitahu Sluicing Claim, Waitahu, Reefton.—Owing to the abnormally dry season at the beginning of the year, three months' sluicing-time was lost on account of shortage of water, and the four tributors employed spent the time in clearing bush, operating their stoning plant, and making alterations to pipe-lines that would enable them to work ground ahead of them varying from 16 ft. in depth at the side of the main gutter and the gutter itself being 30 ft. deep. The shallow ground was removed by ground sluicing, which presented no difficulties on account of the rapidly rising bottom. A hydraulic elevator had to be set up to work the deep ground and the tailings discharged through a sluice-box set on trestles. No attempt was made by the tributors to estimate the yardage treated. They won 304 oz. 3 dwt. 18 gr. fine gold, which realized £3,273 14s. 2d., bringing the total value of gold won since the claim was opened up to £50,044 13s. 1d., and before the claim was taken over by tributors shortly after peace was declared £4,000 had been paid in dividends when it was operated by the company.

Grey County

Moonlight Sluicing Claim, Blackball.—Mr. A. Mutch, who is working the claim under an agreement with Moonlight Sluicing Co., worked fairly continuously during the year with 3 men and won 254 oz. fine gold, which realized £2,604. The face now being worked is at the foot of a gravel ridge extending on a 45° slope for a length of not less than 250 ft. to the first break on face of hill. The top layer is a mixture of rounded gravels, clay, and angular lumps of greywacke, and immediately above a bottom of consolidated sand the recent water-worn gravels carry the gold. These gravels vary a great deal in depth, and the face, being an irregular arc, it is impossible, except by a precise survey, to determine the yardage removed during any period of sluicing. With an excellent water-supply at about 160 lb. pressure per square inch a large quantity of loose material is removed each shift, but the next day's work will probably be devoted to breaking up the large stones left behind, and their removal by water is a comparatively slow process. The stoning plant is not yet in commission. It is understood that the tribute ends at 31st December and the company will carry on during the ensuing year and entrust the working of their claim to a manager.

Golden Sands Sluicing Claim, Barrytown.—Dennehy Bros. continued to work this claim on tribute and won therefrom 257 oz. 4 dwt. fine gold, valued at £2,412 15s. 11d., from ground that averaged about 40 ft. in depth. During the period a fresh method of sluicing was adopted—viz., the ground sluicing to a depth of 15 ft. of the clayey silt overburden. The remaining depth of silt, which overlaid a comparatively narrow band of blacksand of fairly coarse gravel, was lifted by hydraulic elevator into the tailrace and subsequently distributed, after the separation of the coarse material, over a large area of tables. Continued stripping and elevated methods resulted in an increased yardage and simplified working of the claim when buried timber in upper layers had to be dealt with.

Marlborough County

Waikakaho Deep Lead, Deep Creek.—Operations at this mine were suspended for several months owing to the failure of pumping plant. A Pomona pump with a capacity of 700 gallons per minute was installed late in the year and proved to be capable of handling with ease the inflow of water. Workings were drained, and after a resurvey of mine and location of surface features an 80 ft. crosscut through schist rock was commenced to reach No. 1 Bore.

Minerals other than Gold and Silver Iron-ore.—From the Onakaka deposit 400 tons were quarried, crushed, and sold as oxide of iron, valued at £200 on the quarry floor.

Arsenic.—From the roasting-furnace used in conjunction with treatment of the Blackwater Gold-mining Co.'s sulphides concentrates, 7 tons 19 cwt. 1 qr. 13 lb. was recovered. This by-product realized £143 8s. 7d.

Talc and Quartz Magnesite.—Three hundred and sixty-two tons were quarried by Lime and Marble Co. from a Crown mineral licence at Upper Takaka and processed at their works at Mapua, the product being used for agricultural purposes. The value of this product on quarry floor was £253 8s.

Dolomite.—A tonnage of 7,034, valued at £3,517 on quarry floor, was extracted from a quarry at Mount Burnett, in Collingwood district, and shipped from Onakaka in its raw state to fertilizer-manufacturers in the North Island.

NON-METALLIC MINERALS

Clays.—From Polglaze's Clay-pit, Kaka, 370 tons were mined and used for the manufacture of insulators for the Temuka Pottery-works. This tonnage was valued at £582 15s. at mine mouth.

Westport Brick and Pipe Co. produced 200 tons of clay, which was converted into earthenware pipes and fittings.

Greymouth Brick and Tile Co. quarried 1,300 tons of clay, which was converted into building-bricks.

Nelson Brick and Pipe Works produced from the pits at Nelson and Moutere 1,000 tons of clay. The raw material is used for making building-bricks, field tiles, and flue-liners.

GENERAL REMARKS

The depletion of gravel reserves by nearly 20,000,000 cubic yards during the year under review has made heavy inroads into the remaining payable dredging areas. Although fifty-six holes were bored aggregating 3,612 ft., the payable yardage proved fell short of the amount treated by several million yards. Most of the boring was carried out on areas under exploitation with the object of eliminating, as far as practicable, what were formerly payable values but are now marginal on account of increased costs for labour, replacement parts, and stores. During 1948 two extensive areas containing many millions of yards will be check-bored prior to the erection of two large dredges, and it is anticipated that many millions of cubic yards will be added to the present reserves. The placing of two small dredges, now idle, on proved areas will compensate to some extent for two dredges that will probably in 1948 exhaust the claims on which they are now operating, consequently gold produced from dredges is more likely to increase than decrease during the next few years.

Lode mines face an uncertain future on account of scarcity of labour and different conditions prevailing to-day when compared with those existing when the mines shut down during the war years.

Fatal Accidents

Nil.

Serious Non-fatal Accident

Dredges

On 23rd April, 1947, J. Mills, employee, Arahura Dredge, suffered a serious injury to his left eye. While changing buckets a piece of steel was dislodged from a pin and struck him in the eye.

On 16th May, 1947, Bernard Crowley, oiler, Rimu Dredge, was thrown from his bicycle when travelling to work on night shift and suffered a fracture to the base of his skull.

On 28th July, 1947, Archibald Millar, welder, Rimu Dredge, suffered a fractured skull. He was using an oxy-acetylene torch to cut a broken winch shaft to facilitate removal. On completion of the second cut between two pulleys, one pulley suspended by a wire rope moved slightly when slack was taken up. Millar, in an effort to avoid the moving wheels, moved sideways and struck his head against the stationary pulley, and was severely injured.

Metalliferous Mines

On 18th July, 1947, W. Prendergast, miner, Blackwater Mine, suffered a compound fracture of right forearm and lacerations when struck by a cage bar. This bar had been dropped by a braceman down the shaft, and struck Prendergast, who was standing in the chamber in No. 15 Level. Owing to the intense cold, the braceman lost his grip on the bar, which he had ready to fix to the cage. The dropping of the bar was purely accidental.

On 25th August, 1947, R. Robertson, miner, Blackwater Mine, was injured whilst loading a trolley with logs from a stack in No. 15 Level chamber. A log fell from the top of the stack and struck the miner across the right forearm. An x-ray examination disclosed a fracture of the ulna (right arm).

Prosecutions under the Mining Act, 1926

Nil.

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

Quartz and Alluvial Mining

Waitaki County

Sluicing operations have been carried out in the auriferous gravels of the Livingstone and Maerewhenua Goldfields.

Waihemo County

The Callery Syndicate continued mining and development operations at their Round Hill Quartz-mine, and treatment operations were carried out at the Deep Dell Battery, where 1,050 tons of ore was treated. In December, operations at the Round Hill Mine were temporarily suspended on account of rising costs, and scheelite-mining operations commenced on the western side of the Deep Dell Creek near the old Golden Point Mine.

Maniototo County

The alluvial mines at Naseby, Kyeburn, Cambrians, and Patearoa have been operated steadily when water has been available.

Tuapeka County

Mining operations have been continued steadily by the tribute party at the Sailor's Gully Alluvial Mine, Waitahuna Gully.

Intermittent sluicing operations have been carried on in the old Holy Cross Mine, on the north bank of the Tuapeka River three miles upstream from Tuapeka Mouth.

Southland County

Sluicing operations have been carried out in the Waikaia auriferous areas at Happy Valley, Chinaman's Gully, Winding Creek, and Piano Flat.

Wallace County

Sluicing operations have been carried out in the old township alluvial areas at Orepuki.

During the year the Round Hill Gold-mining Co., Ltd., operating on the flat between the Ourewera stream and Lake George, have sluiced and elevated approximately 2 acres to a depth of 50 ft. The ground worked during the year proved to be very hard and difficult to work, as the overburden, in addition to containing a large quantity of timber, has yielded large lenses of hard, stiff clay which has had to be drilled and blasted before it could be sluiced. The water-supply has also been affected at times on account of the lengthy periods of dry weather.

Lake County

Paradise Scheelite-mine.—The tributers have continued sluicing operations on the outcrop of the main reef and are now 40 ft. below the bottom level.

Glenorchy State Scheelite-mine.—Tributers have done a small amount of work in the Glenorchy Mine. A tribute party has been operating on the Kelly Lode, to the north of that section known as Kelly's Bath.

The State Mine Treatment Plant.—This plant has been kept in order by the tributers and scheelite-bearing ore from Paradise, the Bonnie Jean Basin, Mount Judah, and the Rees Valley has been treated.

Heather Rock Syndicate (Wylie Bros.), (Western Slopes of Mount Larkins).—Stoping operations have been carried out in the top level stope and the low level has been extended to 140 ft., where the hanging wall of the reef was intersected and scheelite-bearing ore located. The aerial ropeway from the mine to the treatment plant storage bin has increased the transport efficiency and 45 tons of selected ore has been sent to the Groves Battery.

Bonnie Jean Mine (Elliot Bros. and Tripp), (South-western slope of Mount Larkins).—Stripping and mining operations have been carried out on the northern section of the reef. Some driving has also been carried out in the southern section of the reef.

McAlister's Reef (above Bucklerburn Bonnie Jean Aerial Ropeway Terminal).—A water-supply has been brought to this mine from the Groves Creek, the water being conveyed through pipes on the cliff section, and by water-race in the open section. The overburden is now being removed by sluicing.

Eureka Mine (below Bonnie Jean Terminal of Bucklerburn Aerial Ropeway).—Considerable prospecting work has been carried out on this reef-line.

The Hercules Mine (G. Ross and Party), (on the Lower Southern Slopes of Mount McIntosh).—Prospecting operations have been carried out both inside the Hercules Mine and outside on the line of the lode, but nothing of importance was located. Prospecting operations are now being carried out on other areas.

Long Gully Extended Mine (on the Mid-southern Slopes of Mount McIntosh).—No work was carried out at this mine.

Muddy Terrace Mine, Upper Rees Valley.—Mining operations have been continued during the working season and good ore is being won. The value of scheelite concentrates has advanced very considerably during the year. Messrs. Dalgety and Co. are the principal purchasers.

The Twelve-mile or Few's Creek, Lake Wakatipu.—Very little work has been done on this area.

Dynamo Flat, (Left-hand Branch, Skipper's Creek).—The Mount Aurum Syndicate has continued to operate Currie's Reef during the mining season.

Copper Creek Mining Party.—A reef located in Copper Creek, Mount Aurum Basin, has been tested by trenching and driving. Gold and antimony ore have been located, but further prospecting is required in order to obtain the economic value of the reef.

Crystal Reef, Sawyer's Gully, Skipper's.—Prospecting work has been carried out on the reef outcrop to the north of the main top level in very disturbed country.

Floodburn, Upper Shotover.—No work has been carried out on this area on account of the November, 1946, flood damage and the shortage of back-country labour.

The Schieb-Sutherland party continued operations in the bed of the Shotover at the downstream end of the Big Slip and succeeded in bottoming the paddock. On account of the constant flood damage, this party decided to move to another section of the Shotover River below Maori Point. Water-races and dams have been reconditioned. The mining plant and equipment has been removed from the Big Slip to the new site, where the pipe-line is being installed, and a section of the river-bed between the point where the Deep Creek Co. ceased operations and the commencement of the Maori Point operations of Skipper's Ltd., will be mined by wing dam and elevating methods. Mining operations have also been carried out in the shallow sections of the bed of the river between the Long Gully and Deep Creek by using a petrol-operated Homelite pump for pumping seepage water.

The Atley Bros. have continued wing dam and elevating operations on their river claim in the gorge two miles downstream from the Long Gully Junction.

Arrow River.—The Golden Arrow Gold-mining Co. resumed operations at the silted paddock on the right-hand or western side of the Arrow River bed upstream from the Bush Creek Junction.

Vincent County

Long Drive Syndicate, Gum Trees, Kawarau Gorge (downstream from Roaring Meg Junction).—Driving and sinking operations have been carried out during the year and the deep lead channel was intersected. The gravels did not contain values near the bedrock, but a layer of the gravels about 5 ft. above the bed of the channel is slightly auriferous and operations are being continued by a tributer.

Gees Flat, Kawarau Gorge.—The Homer party have installed a petrol-operated pumping plant just above the Cromwell Development Co. weir, and are now making a tailrace under the headrace. When this work is completed, sluicing operations will be commenced in the Gees Flat Channel.

Nevis Valley.—Williamson's Mine, Stone Huts, Cameron's Gully, Upper Nevis: Sluicing and elevating operations have been carried out in the auriferous lead near the Stone Huts.

Whitton's Creek: Jones and party operated during the early part of the year, but values were low and operations ceased. The plant and equipment has been sold for removal.

Old Township Workings: The McLean party continued to sluice and elevate at the upstream section of the old township workings. D. Adie is ground sluicing at the downstream end of the old workings.

Prospecting operations for antimony-ore have been carried out in the Vincent and Taieri Counties during the year.

DREDGING

Vincent County

Austral New Zealand Mining, Ltd.—This large electrically operated dredge has continued to operate on the Clutha River flats upstream from the Lowburn Bridge. During the year the downstream cut in the western river flat was completed, and the dredge was then turned and dredged upstream in one of the river channels. During the year the acreage dredged was 44⅔ acres, and this yielded 3,359,000 cubic yards for a recovery of 8,674 oz. of bullion. The dredge is kept in good running-order.

Clutha River Gold-dredging, Ltd.—This electrically operated paddock dredge continued operations on the high terrace, Alexandra Flats, and operated for 5,644 hours and treated 2,522,000 cubic yards of material for a return of 6,761 oz. of melted gold; of the above total of 2,522,000 cubic yards, 494,000 cubic yards were tailings that had been treated by former dredges. From such tailings a return of approximately 1·75d. per cubic yard was obtained. The average depth of these tailings was approximately 30 ft. and the total depth of the solid ground (below and above water-level) approximately 78 ft., and the area of the ground dredged was 26·5 acres. The dredge course was to the west or upstream until November, then it was turned to the east or downstream. The old low terrace dredge tailings were entered in order to get an easy turn for the dredge and to bring in a water-channel from the river. This dredge is in good running-order and is operating in the high terrace.

Molyneux Gold-dredging Co., Ltd.—This electrically operated river dredge has been tied up in the Kawarau River at Scotlands Point.

Southland

The Rainbow Dredging Syndicate, Maitland, Waikaka Valley.—This is a small Diesel-operated sluice-box dredge suitable for dredging shallow ground. The present dredging area is practically exhausted.

ACCIDENTS

There was one fatal accident during the year. On the 11th November Edwin Francis Jopson, shift foreman on the Austral New Zealand dredge, suffered fatal injuries through being caught between the tailings stacker terminal pulley and the framing.

QUARRIES ACCIDENTS

There were two fatal accidents during the year:—

On the 23rd February John McCone, a quarry driller, suffered fatal injuries from a fall of rock in the quarry of the Totara Lime Co.

On the 24th June John Pavelka, quarry-manager, suffered fatal injuries from a fall of rock at the View Hill Chalk-quarry, Oxford.

ANNEXURE B

QUARRIES

REPORT BY THE INSPECTOR OF QUARRIES FOR THE NORTH ISLAND (R. C. RUFFIN)

Report for the year ended 31st December, 1947, on surface and underground quarries within the North Island District.

QUARRIES

A total of 270 quarries were worked during the year 1947, being a decrease of 1 compared with last year, while the number of men employed at quarrying for the year was 1,109, an increase of 23 over the number for 1946.

OUTPUTS

The total output of material quarried for the year 1947 was 1,908,698 tons, valued in the quarries at £567,167, compared with 1,641,881 tons, valued at £416,192, for 1946.

There is an overall increase of 266,817 tons of material produced compared with the figures for 1946. It is noticeable that the output of agricultural lime is 12,847 tons less than that for last year, and that limestone for the manufacture of cement and mortar shows a decrease of 19,701 tons. It was apparent that the companies producing these products in the period under review were seriously handicapped in their output through the shortage of adequate labour; as time progresses this shortage of labour may assume serious proportions. The young men are not coming into the industry, and it is from the ranks of the young men trained in the industry that the managers of the near future should be drawn to relieve the older men now in charge of major works.

Owing to the method adopted this year of compiling the statistics for road-metal, clay, and the like, a comparison of yearly output will not be given, but from my own observations when travelling through my district there is a marked increase in the amount of road-metal used in construction and maintenance.

It should be noted, also, that large quantities are used by the Public Works Department obtained from their own sources of supply, which are other than those dealt with in this return.

UNDERGROUND QUARRIES

An increase of underground work coming within the provisions of the Quarries Act, 1944, was recorded for the year. Most of the men now engaged in this class of work have gained their experience in tunnels driven by the Public Works Department.

Auckland City Council.—Tunnelling under Nuffield Street, Remuera: A distance of 205 ft. was completed; the tunnel is to facilitate a storm-water relay. The work was done on contract.

Auckland City Council.—Relaying of Combined Sewers underground: The tunnelling is under Parnell Road, George Street, and Maunsell Road; the work is on contract.

Wellington City Council.—Karori Reservoir Tunnel, 600 ft. in length, and Maldive Street Tunnel, Khandallah, 900 ft. in length: The dimensions are 7 ft. by 7 ft. and the tunnels are timbered with three-piece sets and laths. The work is done on contract.

Wanganui County Council.—Shafts 24 ft. deep were sunk in Nixon Street. Sinking by orthodox methods is not adopted; 2 ft. 6 in. diameter reinforced-concrete pipes are jacked forward with an hydraulic jack.

Auckland City Council.—Ngahui Road: A shaft was sunk in basalt to test the deposit as a quarrying proposition.

Auckland City Council.—Glendowie Drainage Scheme: Shaft-sinking and tunnelling was carried out in connection with this scheme.

Auckland City Council.—Titirangi Tunnel: Length of tunnel, 170 feet. The tunnel is for a pipe relay in connection with an Auckland water-supply scheme.

Auckland City Council.—Mount Hobson Reservoir Reserve: Shafts were sunk at various points through clay and scoria to test bottom rock for an extension of the reservoir.

ACCIDENTS

Three fatal and two serious accidents happened at North Island quarries in 1947.

Fatal Accidents

On 21st May, 1947, Edward Colin Lapwood was killed at Smeed's Quarry, Pukekawa. A motor-truck driven by the deceased overturned when backing to a stock pile to tip rock dust.

On 13 August, 1947, Hiiritanga Kaiawe was killed by a fall of ground in a quarry at Te Tii, Bay of Islands.

On 17th October, 1947, Stanley Thomas Port, a prisoner, was killed at the Mount Eden Prison Quarry through falling from the face. A safety rope and belt were available, but the deceased had failed to secure himself to the rope.

Serious Accidents

On 6th February, 1947, W. Seymour sustained a broken left leg and injuries necessitating the amputation of the right foot. The accident occurred at the Punaruku Quarry, Te Araroa, which is operated by the Department of Maori Affairs. The injuries were caused by the tilting of a large rock in the course of barring down. Seymour was at the time attached to a safety-rope, which probably saved him from fatal injury.

On 12th February, 1947, Gordon McDowell sustained injuries to his left arm and head whilst working at Stevenson's Quarry, Runciman. McDowell was struck by a piece of rock falling from the wall of an excavation which was being made for the foundation of a new crushing plant.

The accidents of Port and Seymour occurred at places which were not quarries within the meaning of the Quarries Act, 1944, but were inspected and reported on when news of the accidents was received.

PROSECUTIONS UNDER THE QUARRIES ACT, 1944

Eight informations were laid during the year for breaches of the Quarries Act, 1944 :—

On 16th January, 1947, at the Waverley Magistrate's Court a quarry occupier was convicted and fined for operating a quarry without there being a qualified manager in charge, contrary to section 8 of the Quarries Act, 1944.

On 22nd April, 1947, at the Fielding Magistrate's Court a quarry occupier was convicted and fined for operating a quarry without there being a qualified manager in charge, contrary to section 8 of the Quarries Act, 1944.

On 23rd May, 1947, at the Auckland Magistrate's Court a contractor was convicted and fined for operating a tunnel without there being a manager in charge, contrary to section 8 of the Quarries Act, 1944.

On 23rd May, 1947, at the Auckland Magistrate's Court a manager in charge of tunnelling was convicted and fined for failing to make a true report of his daily inspection, contrary to Regulation 51 of the regulations under the Quarries Act, 1944.

On 15th May, 1947, at the Waverley Magistrate's Court a company was convicted and fined for operating a quarry without there being a manager in charge, contrary to section 8 of the Quarries Act, 1944.

On 18th July, 1947, at the Auckland Magistrate's Court a quarry-manager was convicted and fined for failing to take reasonable prevautions to prevent rock flying from blasting operations, contrary to section 16 of the Quarries Act, 1944.

On 18th July, 1947, at the Auckland Magistrate's Court on occupier was convicted and fined for operating a quarry without there being a manager in charge, contrary to section 8 of the Quarries Act, 1944.

On 8th December, 1947, at the Napier Magistrate's Court a quarry occupier was convicted and fined for operating a quarry without there being a manager in charge, contrary to section 8 of the Quarries Act, 1944.

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.

Wellington, 5th July, 1948.

SIR,—

I have the honour to present my annual report on the coal-mining industry of New Zealand for the year ended 31st December, 1947.

OUTPUT

The total output for the year was 2,751,725 tons, a decrease of 42,145 tons on the 1946 production.

The decreases in the respective districts were: Northern District, 629 tons; West Coast District, 1,577 tons; Southern District, 39,939 tons.

The statement shows the tons of coal raised, men employed, and lives lost by accidents in and about colleries to 1947 :—

Year.	Output, in Statute Tons.	Persons ordinarily employed.			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 1941 ..	95,336,168	..	..	..	..	..	526
1941	2,639,507	1,358	3,633	4,991	1·51	0·80	4
1942	2,680,041	1,338	3,659	4,997	2·24	1·20	6
1943	2,787,868	1,375	3,999	5,374	2·87	1·50	8
1944	2,805,970	1,637	3,958	5,595	4·28	2·14	12
1945	2,833,576	1,660	3,932	5,592	2·12	1·07	6
1946	2,793,870	1,738	3,819	5,557	1·43	0·72	4
1947	2,751,725	1,703	3,739	5,442	1·43	0·73	4
Totals ..	114,628,725	..	..	..	..	..	570

ACCIDENTS

Serious and fatal accidents at coal-mines during 1947 were as follows :—

	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.
Carbon-monoxide poisoning ..	..	..	1	1
Other gases	1	1	..	..
Explosions, fire-damp, or coal-dust ..	..	..	..	..
Falls of ground or timber	2	2	11	12
Explosives	..	..	1	1
Haulage	..	..	14	14
Electrical	1	1	..	..
Miscellaneous—Underground ..	..	..	5	5
Surface	..	..	8	8
Totals	4	4	40	41

Four fatal and forty-one serious accidents occurred at coal-mines during 1947, including three serious accidents at opencast mines.

Three of the fatal accidents took place in the Southern District and one in the West Coast District, in each district one fatality being due to falls of coal or timber.

All the serious non-fatal accidents due to falls of coal or timber occurred in the West Coast District, while the Northern District for 1947 had the very fine record of no fatal or serious accidents due to this cause.

Serious non-fatal haulage accidents were more evenly distributed, however, the Northern District having five of the total of fourteen, while the West Coast District had six and the Southern District three.

DANGEROUS OCCURRENCES

Of the fifty-four dangerous occurrences reported by Inspectors of Coal-mines during the year, no less than forty-seven were due to spontaneous heatings. Heatings of this nature are unfortunately a direct result of our methods in New Zealand of working thick seams, and until that method is changed will continue to cause considerable danger to personnel and heavy loss of coal.

The Northern District had twenty-three cases of heating, including no less than seven at the Mangapehi State Mine, while the West Coast District had thirteen cases and the Southern District eleven, the danger of the heatings being increased in several of the mines in these two districts by the presence of inflammable gas in the mines.

Four large accumulations of inflammable gas in the West Coast and Southern Districts occurred, but were cleared without trouble by attention to the ventilation. An accidental fire at the Wilton State Mine, due to brattice having been lit by an open light, was dealt with at once and fortunately caused no loss.

LEGISLATION

The Coal-mines Amendment Act, 1947, was passed during the year, making provision for (*a*) the manner of exchanging coal-prospecting licences for coal leases, (*b*) defence of actions for the recovery of damages for injury or death, and (*c*) the rate of payment of contributions to the Coal-miners' Relief Fund.

PROSECUTIONS

Six prosecutions were taken by Inspectors of Coal-mines for breaches of the Coal-mines Act or regulations, convictions being obtained in all cases.

I have, &c.,

R. H. SCHOEN,

Inspecting Engineer and Chief Inspector of Coal-mines.

ANNEXURE A

SUMMARY OF REPORTS BY INSPECTORS OF COAL-MINES

NORTHERN INSPECTION DISTRICT (C. HUNTER, INSPECTOR OF COAL-MINES)

SUMMARY OF OPERATIONS OF EACH COLLIERY FOR THE YEAR 1947

North Auckland District

Kamo Colliery (J. Makinson (First Class), Mine-manager).—The area from which coal was produced during the year is divided into two main sections, known as the East Dip and Slant Dip Sections. The point of entry to East Dip Section coincides approximately with the interception of the coal-seam by the No. 3 Mine stone drive, the coal produced in the section being landed in the laybye at foot of stone drive by means of direct hauler suitably placed to secure this. The dip has been extended to a distance of 22 chains from the top and is in coal approximately 8 ft. in thickness. The workings which lie to the "left" of dip, or the east side, accommodate 8 pairs of miners. Coal is won from two separate sets of levels, the lower of these being approximately 3½ chains from the face of dip. In the lower levels preparatory work for the formation of a panel between them and the next set of levels above is in progress. In the upper set of levels the faces have been advanced a distance of 11 chains in a north-easterly direction from the dip side and are approaching a downthrow faulting of between 15 ft. to 20 ft. The coal mined is from the bottom seam. Early in the year attention was drawn to the height of travelling road and hauling dip, which was getting too low for comfortable walking; however, at the end of the year very little had been done towards rectifying this condition, shortage of shiftmen being the plea advanced. In the Slant Dip Section there has been no advancement of the face of main dip, which is standing at approximately 57 chains from the point of entry in inferior coal of only 3 ft. in thickness. The coal-production is secured from a section entered by way of a pair of dips driven from the main Slant Dip in a south-easterly direction from a point 14 chains up the dip from the face of Slant Dip. In this section, 7 pairs are placed; the seam is known as the top seam and is of good-quality coal approximately 8 ft. to 9 ft. in thickness. In a pair of levels about midway down the Slant Dip 3 pairs are placed driving to the rise. The new No. 6 Drive from the surface is being worked on one shift and has been driven for a distance of about 300 ft., or an advancement for the year of 170 ft.

Waro Colliery (P. T. Peattie (First Class), Mine-Manager).—The final stage of extraction of pillars was completed, and the mine closed down on 19th September, 1947.

Whareora Colliery (J. A. Pollock (Deputy), Mine-manager).—Only 40 tons of coal was produced before ceasing operations on the 30th June, 1947.

Cunningham's Opencast, Hikurangi (C. G. Cunningham (Underviewer), Mine-manager).—A party of 2 men have been employed on the recovery of some stumps of pillars left in by a previous party. Recovery of this coal is secured by means of stripping the overburden. It is not considered that there is a long life ahead of this venture.

Kiripaka Coal-mine (H. Pawson (Permit), Mine-manager).—A lease of this freehold property was secured by H. Pawson with the intention of opencasting to secure some pillars that had been left from an old mine previously worked in that area. Due to the nature of the work and the dangerous conditions existing, they were instructed in January of the current year to cease operations until a sufficiently qualified person could be secured to take charge of the work. A little over 300 tons had been produced from this area from the time of starting.

Waikato District

Pukemiro Colliery (S. R. Eyeington (First Class), Mine-manager).—The output from this company's lease is secured from the operating of two mines, known as the North and South Mines. In conjunction with the underground workings in the North Mine it was found expedient to conduct coal-winning operations as from the surface outcrop in the No. 2 Right Section. This was done by means of stripping the surface cover, the men employed on the production of coal working in the open. The coal thus won is hauled through the mine to the main rope road and then transported to the screens. Several thousands of tons of coal have by this means been recovered which otherwise would have been lost along the outcrop horizon. The above is the only departure from the routine work of pillar-extraction which has been conducted for many years in this mine. The retreating line of extraction is gradually reaching a predetermined boundary-line enclosing an area from which it is not intended to extract any pillars at present, thereby reducing the present productive life of the mine; however, the output has for the meantime been augmented by output secured from the opencast workings. Although the small pillar area is being left, provision for securing same at a later date is being made by leaving suitable means of ingress. The foregoing procedure has been adopted as a precautionary measure to prevent damage to surface property resulting from subsidence of strata consequent upon the removal of support from strata by way of the extraction of pillars. Seven pairs of miners are employed in the mine.

In the South Mine the area worked is divided into five districts from which coal is produced These districts are known as the Taupiri, Horne's Dip, Mid, South Straight, and No. 1 Right Sections. In the Taupiri Section 11 pairs of miners are employed in the extraction of pillars; this work has been conducted in a satisfactory manner and good results have been procured.

Horne's Dip: Early in the year pillar-extraction was commenced and, taking into account the rather adverse conditions existing in the section, good results from the productive point of view have been maintained.

Mid Section: Operations in this section are nearing completion in the small areas known as Nelson's and Carlson's Jigs, and with a view to maintaining continuity of output from the section the places on the inbye side and located to the right and left of the main haulage road are being opened up. The preparatory work in connection with the withdrawal of the pillars is in an advanced stage, and when completed 7 pairs of miners will be accommodated here.

South Straight Section: In this section the work of developing an area which, on account of the hard nature of the coal, had been left unopened is being carried out. One small panel has been formed, and a second is in the process of being developed. During the year 4 pairs of miners have been engaged in this work. Several requests from the Miners' Union for the introduction of power-driven drills have been resisted, on the ground of the misuse of privileges granted to the miners by way of concessions on account of coal hardness. The alleged misuse of privileges is based upon the fact that evidence of the non-preparedness of coal for firing of shots and misplacement of shot-holes is and always has been abundant, and it is considered that by granting facilities for the more rapid drilling of shot-holes acquiescence with the contravention of the regulations governing shot-firing could be charged against the grantor, hence the resistance.

No. 1 Right Section: The workings in this section have reached the fringe of area of splinty coal which actually prescribe the boundary of workable coal in the section, and as a consequence pillar-extraction has been commenced as from the boundary retreating outbye. Twelve pairs of miners are employed in the section. It is intended to reopen an old section which was entered into originally by way of a stone drive driven in the floor stone of the seam. This section lies to the right of main haulage road. During the interval of standing this drive has collapsed, and requires to be picked up and generally repaired to provide suitable means of ingress; this work is being proceeded with. Due to the extent of workings and length of airways in the No. 1 Right Section, the adequate ventilation of the district was difficult to secure, and in an effort to improve conditions the Bumsted and Chandler fan used for ventilating the North Drive was transferred to the South Drive to duplicate the fan acting in the South Mine. As a result a distinct improvement has been effected to the ventilation generally.

Renown Collieries, Ltd. (T. Geddes (First Class), Mine-manager).—In recent years coal-winning operations have been carried out in the two main mines located on the property leased to the company, these mines being known as the No. 1 Drive and the New Mine. However, towards the latter part of the year coal-winning was suspended in the New Mine and all efforts towards production were concentrated on the No. 1 Drive. The suspension of coal-production in the New Mine resulted from the interception of a major faulting in the main headings approximately 70 chains from the surface entrance. The effect of the faulting was emphasized due to the fact that the workings lying to the south of the main haulage heading had all reached the common boundary-line separating the MacDonald Mine from the Renown property. The choice of the extraction of pillars located between the haulage and above-mentioned boundary, or further prospect work ahead of the main haulage heading, had to be decided upon. Taking into consideration the long view, the manager wisely chose the conducting of the prospect work, this to be done by way of boring from the surface at chosen points in advance of the heading faces. To have decided otherwise and attacked the pillars would have destroyed the best possible means of ingress to coal ahead of the faulting if such exists in workable quantity. In so choosing, however, a serious dislocation of the then existing conditions *re* coal-production had to be faced, and for a time some considerable congestion resulted from the placing of the men from the New Mine in the No. 1 Drive; the consequent difficulty in connection with rearrangement of transport roadways is, however, being overcome. In the No. 1 Drive, on account of the coal-producing sections being located at some considerable distances apart, it was decided in June to suspend coal-producing activities in those sections requiring the longest haulage ways. It was considered at the time by so doing that elimination of the duplication of rope-road workers at strategical points could be achieved, and, further, that by concentrating the miners in a smaller area the supervision of operations could be more effectively accomplished. It may be said that the visioned success of this change-over was only partially successful, for in the removal of one difficulty others arose. In an effort to bolster up production, the decision to open again in the old No. 1 North headings—that is, the headings driven from the position where the stone drive crossing the big faulting contacted the coal-seam—has recently been undertaken, and it is hoped that success will crown the efforts to secure the desired end. Again in this direction the area of coal in the top seam lying to the south of the main haulage road and immediately outbye of the big faulting has been opened up. However, in two of these places downthrow faults have been intercepted and short drives in the fireclay are being driven to again contact the seam. In the other parts of the mine reached by way of No. 1 South Drive, pillar-extraction is being successfully carried out.

Wilton State Collieries (J. Penman (First Class), Mine-manager).—The statement for the year covers the operations in the Nos. 2 and 3 Mines. Coal-production in the No. 2 Mine was confined solely to the extraction of pillars, this work being done in a very satisfactory manner with very little loss of coal resulting from the operations. In the No. 3 Mine, with which is incorporated the No. 3 Extended Mine, the extraction of pillars is being carried on in the B Panel Section. Coal-production from this panel is reaching the final stages; however, several places remain in the A Panel, No. 3 Mine. In the No. 3 Extended the area is divided into six sections, these being known as Nos. 2, 3, and 4 East and Nos. 2, 3, and 4 West. In the No. 2 East Section, where a coal-cutting machine and power-operated drilling-machine had been installed, the area was opened up by driving two main headings and development work carried on simultaneously to the north and south of the headings. After driving the headings for a distance of 19 chains from the main haulage road contact was made with a downthrow fault of 69 ft. displacement on the south side and with the line of outcrop on the north side, and further development was not proceeded with. The two mechanical units which had been used were then transferred to the No. 4 West Section. In No. 3 East, where it was anticipated a system of mechanized mining could be adopted, a series of five headings with crosscuts driven diagonally to direction of the headings were laid out as part of the general scheme to be employed in such mechanization. However, due to delays of procuring necessary machinery the development work has been completed up to the 69 ft. displacement, which terminated similar development work in the No. 2 Section. The continuation of opening up to the east was suspended until the fault could be crossed, when fresh development would be commenced in the area from the inbye side of fault line. In the Main Heading, No. 3 Section, a cross-measure drive to cut the fault line was commenced and continued on a grade of 1 in 4 and the seam picked up on the lower level at a distance of 223 ft. The line of the No. 3 Heading was preserved and driving in the coal recommenced; however, after advancing approximately 2¼ chains an upthrow fault of 8 ft. displacement was contacted; this fault has been crossed and driving in the coal continued. From the main heading coal-wining places are being driven in a northerly and southerly direction opening up the area divided by the fault line. In the No. 2 West Section development work has been completed. In the No. 4 West Section development work was speeded up with the introduction of the coal-cutting machine from No. 2 East; however, the area has been disappointing in so far as extent is concerned. The coal-seam in the main heading and to the north of it has advanced into coal of a poorer quality and is only about 3 ft. in thickness. A new endless-rope haulage system had been put into operation in anticipation of an increased output from this section.

During the year the main fan for the mine was installed at a surface opening made into the No. 2 East Section. Considerable improvements have been made with the transporting arrangements on the surface, as the men will be conveyed to the bathhouse and from there to the entrance of the No. 3 Extended Mine, thereby reducing the walking distance of men proceeding to work by about 60 per cent. An extensive boring programme has been carried out during the year.

Rotowaro No. 1 Mine (E. Corden (First Class), Mine-manager).—In No. 1 Mine work was limited to three pairs of miners on extraction of pillars in the New Haulage and Hill 60 Sections. In June of this year a coal barrier in the Ollis's Dip area burnt through to the surface, which let in the flood waters from the creek above, this inrush of water resulting in the pumping equipment being submerged. After a very trying time the creek above was diverted and the water in the mine was pumped out. In the same period a fire broke out in the New Haulage Section which resulted in the section being sealed off temporarily. Everything in connection with the above items is now in a satisfactory condition.

Callaghan's Dip Section: In Callaghan's Dip Section two headings have been pushed along for the purpose of opening up panels in No. 6 Area. This territory is opening up into a good seam of hard coal approximately 15 ft. high. In No. 5 Panel the seam got thinner as it approached the south and a lensing of the seam was suspected. Underground boreholes proved this to be correct. Preparations have been made for two stone drives to be driven a distance of 7 chains parallel with No. 4 Panel to pick up the seam on the lower side of the lensing. Ahead of these stone drives is a big field of coal which has been proved by boreholes.

Rotowaro No. 3 Mine: Pillar-extraction is proceeding in most of this mine. Brown's Section gave trouble with a fire which resulted in a row of fire stoppings being erected and a barrier left in to isolate the fire. Moodie's Jig Section was opened up again and pillar-extraction is proceeding there. B Section was also opened up and revealed a good section standing in pillars. An endless-rope haulage has been installed in the New Dip Section for the purpose of working an area of solid coal. Preparations are being made to drive a pair of headings in C Section which should tap an area of solid coal which is behind the Stone Drive Section.

Alison No. 1 Mine (W. Currie (First Class), Mine-manager).—The opening-up of No. 6 Panel is proceeding into an area of solid coal. In all other sections of this mine pillar-extraction is taking place. Considerable trouble has been experienced in this mine with heatings in the goaf when the extraction started along the outcrop. A bulldozer has since filled in all the pit falls and the position is more satisfactory now.

Alison No. 2 Mine: Pillar-extraction is taking place in X Section. In all other sections panels are being formed in virgin country. The main headings are being driven along into a large field of coal. A fault that was encountered in the main drives has been driven through and a complete circuit made.

During the year a considerable amount of work has been performed in two drives to the surface. These were put through for the purpose of making the main haulage road a direct route to the surface and a return airway respectively. Both these drives have been lined all around with reinforced concrete for a considerable distance. Work is proceeding with the installation of a torpedo fan which is rated to produce 150,000 cubic feet per minute against a 4 in. water-gauge. During December the haulage system was altered at Alison No. 2 Mine. A new endless-rope hauler has been installed on the surface and the mine rope now pulls direct to the surface. A complete new haulage road has been constructed on the surface for the purpose of taking the coal to the screens.

Alison Opencast: During the year an opencast venture was commenced on the company's property at the Barker's Road area. This area has opened up very well and coal is now being produced. This coal is hauled in lorries to a siding on the railway-line which runs to the Alison Mines.

Boring Programme: During the year boring operations from the surface on the company's property at Rotowaro were proceeded with. These, together with the boring operations from the previous years, have revealed vast deposits of coal in the following areas:—

Callaghan's Dip Area: Forty bores have been sunk over an area of 400 acres, of which 300 acres proved to be coal-bearing with seams up to 25 ft. thick. Overlaying the mining seams there is opencast coal extending over approximately 43 acres.

No. 3 Rotowaro Mine (Stone Drive Area): Three bores sunk here proved that in the vicinity of the mine workings the coal-seams are split by seams of fireclay.

Alison No. 2 Mine: Two bores put down in Rotowaro Township ahead of C Section proved 19 ft. of coal.

Crook's Area (East of Rotowaro Railway-station): Forty bores approximately 5 chains apart here proved up to 13 ft. of coal covering an area of about 70 acres, of which 35 acres could be worked by opencast methods.

Maori Farm Area: Seventeen bores here covered 90 acres and proved coal-seams of maximum thickness of 51 ft.

Between Maori Farm Area and Wilkie's Dip, Rotowaro Mine, a bore proved the coal-seams to be split by intrusions of fireclay.

Huntly West: Thirty chains south of Ralph's Mine workings eighteen bores sunk proved, in some cases, coal up to 40 ft. thick, thus disclosing a further coal area here of 50 acres.

Alison Nos. 1 and 2 Mines: At the end of the year thirty-one bores had been sunk to the north and east of the Alison Mines, proving seams up to 22 ft. thick and disclosing many acres of both opencast coal and areas suitable for mining. Boring in this locality was still proceeding at the end of the year.

Glen Afton No. 1 Colliery (W. C. Inglis (First Class), Mine-manager).—Coal-winning operations during the year have been carried on by 17½ pairs of miners placed in the L, H, and E2 Sections. The L Section, which is located inbye from the terminus of the main rope road, is a small section lying between two faults, where 5 pairs have been engaged on pillar-extraction. The work of extraction has presented very little difficulty and practically complete extraction of pillars has been achieved. The area from which nearly all the coal has been removed will be abandoned at an early date, and in anticipation of this preparatory work is well advanced towards the opening-up of another pillar section outbye from the present terminus of haulage road. In the E2 Section 10 pairs have been employed in the extraction of pillars. The conditions here have not been so good as in the L Section, due to the existence of a number of step faults inducing slippery lines of break up into the roof stone. These have caused extreme care to be exercised in the removal of the pillars on account of their treacherous nature and necessitated erection of extra timber throughout the whole of the section. On the other hand, good outputs have been secured, due to the physical structure of the coal being influenced during the period of faulting, evidence of this being seen in the existence of numerous lines of break, these being in the nature of cleats in the seam rendering it more free to work. In the H Section 2½ pairs have been employed opening up a strip of coal placed between two faults, one of these being a step-up fault of approximately 40 vertical feet displacement. This fault is really the continuation of the J Hill 60 ft. fault. In addition to the foregoing number of men, a pair of shiftmen have been employed driving a stone drift on a grade of 1 in 7 to cross the 40 ft. faulting and so gain access to an area of pillars in K Section; these have been left for a number of years. This drive is now completed and preparatory work in connection with the extension of endless-rope haulage system is well in hand.

Glen Afton No. 2 (MacDonald Colliery) (H. Stirling (First Class), Mine-manager).—Coal-winning during the year has been carried on in the E and H Pillar Sections, and for the greater portion of the year in H2 Right Panel. Pillar-extraction has been completed in H4 Left and H3 Right Panels. In addition to these pillar sections, development work has been carried on in the H1 Left Panel and the extension of K rope road. Two panels were in course of being developed at the inbye end of the K rope road, this work being completed towards the end of the year, and it is proposed to start pillar-extraction in this area early in the New Year. In K Section sufficient coal-dust to cause apprehension was being made during mining. With a view to improving the working-conditions and at the same time raise the safety factor it was decided to spray the working-faces and for some distance back from the face with water. This decision materialized in the installing of a high-pressure pump supplying

the section with water through a 1¼ in.-diameter pipe-line which acts as the main feeder; from this feeder ¾ in. pipe-lines are taken up to within 50 ft. of every working-place. Each pipe-line is fitted with a stop-valve. The 50 ft. distance between pipe-line and face is covered by a rubber hose common to all places. The scheme has been a marked success in laying the dust, thereby preventing it being carried in suspension in the mine air currents, and it is proposed to extend the system throughout the mine.

No. 4 Mine: Development work has been completed in the First Jig Panel and from about the middle of the year all coal has been won from pillar-extraction.

Extensive alterations have been made to the bathhouse, these very considerably improving the bathing and changing facilities.

Waikato Extended Opencast (Roose Shipping Co.) (E Bond (Underviewer), Mine-manager).—Operations were continued during the year on the production of coal from opencast workings.

Bell and Devlin's Mine (H. Bell (Deputy), Mine-manager).—This party, consisting of 6 miners, have been employed in a small area at Rotowaro leased from Taupiri Coal Co. Coal is produced from four single places, and, with the exception of the place on the west side of the main heading where the coal is rather fragile, the quality is quite good. The main heading has been advanced to a distance of 5 chains from the surface. The access road to the mine caused some inconvenience during a wet spell in the winter months when coal could not be conveyed over it. Output for the year was 4,381 tons.

Huntly Brickworks.—No coal was produced during the year.

Glen Afton Potteries Opencast (J. Howie (Permit), Mine-manager).—To suit the requirements of the pottery, coal is secured from a small area of coal by opencast methods; during the year about 200 tons was used.

Te Pahu Colliery, Karamu.—No work has been performed at this mine during the year.

Dally's Mine, Hauturu.—No coal has been produced during the year.

Whataurhata Campbell Colliery (A. Penman (First Class), Mine-manager).—The coal output of 9,156 tons for the year has been won from the working of five single places. During the period under review the location of working-places has been transferred from what was called the Jig Section, lying to the east of the dip entry, to the Dip Section. The Dip Section, located at foot of main dip, is approximately 10 chains from the surface. The coal is looking quite good and conditions in the mine generally good. One of the difficulties complained of is that all screened coal has to be bagged, necessitating the employment of additional men to handle a given output. All the work so far carried out in the present area is by way of development work, no pillar-extraction having been attempted.

Rangitoto Opencast Coal-mine (Hamilton and Harvey), Otorohanga (K. L. Harvey (Quarry Certificate), Mine-manager).—Work has been carried on intermittently during the year, only 2,869 tons having been produced.

Kimihia State Opencast Mine (F. J. Handcock (Quarry Certificate), Mine-manager).—No. 1 Section: Overburden stripping proceeded between 1st April to 6th June, 1947, and 1st October, 1947, to end of the year. No stripping was carried on in the winter months between 7th June to 30th September, 1947.

Stripping was prosecuted in the southern section of No. 1 Area from 1st April to 6th June with the Bucyrus Erie 120B rigged as a drag-line and operating from natural surface on hardwood mattress, loading into Athey wagons, and carting to a lake-side tip. During the shutdown period, 7th June to 30th September, the 120B was converted from drag-line to shovel rig; with the commencement of the new season the shovel dug her way down to top of coal (which for the most part is solid in this south section) and proceeded to operate on the coal floor without need of mattress, Athey wagons again transporting stripping to a tip-head established in the worked-out nothern area. 120B shovel performance has been excellent. Overburden materials have been most fluid, will not stack, and consequently make tip-head maintenance difficult. In the period under review the stripping total was 225,900 cubic yards. Coal output in the period was 68,342 tons.

The northern area of coal was exhausted by 18th December and the whole of the slack-line plant —mast, winch, cable, anchors, &c.—had to be relocated to permit production resumption from the recently stripped southern area; this was completed by 7th January, 1948. As the section of coal being worked is solid, the quality of the coal is excellent.

The new vibrating coal-screen and plate feeder has been operating from 24th June, 1947, and has been a pronounced success.

Kimihia No. 1 Extended Area: Stopbank-construction was resumed on 19th August, and for a period in October, November, and December was prosecuted with the largest aggregation of earth-moving plant assembled in New Zealand. Virtual completion of this job was reached in mid-December and dewatering commenced.

A 12 in. Pulsometer pump driven by a 35 h.p. motor dewatered the area between 13th December, 1947, to 9th January, 1948, working 532 hours.

The construction of seven workmen's cottages is proceeding satisfactorily; fencing, roading, and related work will proceed as soon as cottage contract has reached completion.

Rehabilitated area at No. 4 will need an application of artificial manure, probably some local seeding and harrowing.

Glen Afton State Opencast (T. Connolly (Deputy), Mine-manager).—Operations ceased on the 22nd May, the area having been fully exploited.

Kemp's State Opencast Mine, Glen Massey (T. Bigwood (Quarry Certificate), Mine-manager).—From the working of three thin seams by opencast methods an output of 56,391 tons was produced for the year; this shows an increase of 3,932 tons from the previous year. The stripping-work carried out on the area considerably exceeds the area from which coal has been recovered and at the present time a fairly large tonnage of coal is standing uncovered.

Taranaki District

Mangapehi State Colliery (H. Quinn (First Class), Mine-manager).—The major effort during the year has been directed towards the completion of pillar-extraction in the Nos. 1 and 2 East Panels. This has now been accomplished and the work of further development of the mine is receiving the undivided attention of the management. In connection with the further development, two dips have been commenced from the No. 2 East Level; these were broken away at approximately 6 chains from the main haulage dip and have been driven for about 300 ft. in a diagonal direction to the No. 2 East Level, and these are in good-quality coal. The No. 2 East Level has been advanced to a distance of 32 chains from the main dip and a new endless-rope haulage system has been installed and is now being successfully operated, power being supplied by means of a 50 h.p. motor. The state of return airways due to floor heave was such that nothing less than complete cleaning up of same would be of much value, this representing a job of major proportions; however, despite the magnitude the work was tackled and by the end of the year had been largely accomplished, thereby considerably improving the conditions in the mine both from the ventilating of the workings and also providing alternate roadways where walking could be comfortably undertaken.

There have been several fires resulting from spontaneous heating, these having been successfully and quickly suppressed with the aid of water applied directly through high-pressure pipe-lines laid on to all the sections of the mine. On one occasion assistance was sought from the Mines Rescue-station, Rotowaro, to combat a serious heating.

Tatu State Colliery (W. Farnworth (First Class), Mine-manager).—In the main the output for the year has been won from development work in the No. 3 South Dip and Nos. 1 and 2 Rise Panel Sections, with only a minor portion procured from pillar-extraction from what is known as the Barrier Pillar Section. The work of development in this mine is seriously hampered due to difficulties existing in the form of two faults preventing the extension of the workings laterally from the Main South Heading haulage road. These two faults, known as the Cunningham and Victory faults, are only about 12 chains apart and running approximately parallel to one another. These represent the boundary-lines between which the development has been carried out. The Victory fault, stated to be a 50 ft. vertical upthrow, is located to the west of the Main South Heading, whilst the Cunningham fault lies to the east and exists as a 20 ft. vertical downthrow fault separating the old workings of Egmont Collieries from the present Tatu workings. In the work of development, two headings to act as transport roads have been driven from the Main South Heading to contact the Cunningham fault, which it is proposed to cross by means of a dip drive into the old Egmont area; when contact with the coal has been made, the intention is to set back in the coal towards the fault line and secure contact with the Tatu workings by means of an upcast shaft. The Main South Heading represents a diagonal cutting the area between the two faults more or less equally with the face of the headings now in contact with the Victory fault, thus it can be visualized that the limit of development between the confines of the faults has been nearly reached, and to do much more the crossing of the Victory 50 ft. upthrow fault will also require to be undertaken in line with the Main South Headings. This necessitates a rising cross-measure drift of some considerable length to be proceeded with. It has to be recorded that a large amount of reconditioning-work has been carried out during the year, and this has been executed in a most commendable manner. The aforementioned work includes the making of a travelling-road throughout the old No. 1 West Section, the cleaning-up and regrading of the Main South Heading, and also the repair work carried out in the main return airway. In the latter item trouble is experienced due to a weak and heavy roof, with heaving floor conditions making maintenance work more or less continuous and expensive. In an effort to arrest the result of roof movement the manager has introduced arched rail sets, replacing the timber sets, which were being broken shortly after the erection of same, and up to the present his effort seems to be successful. The cleaning-up of the Main South Heading represented a job of major dimensions, as approximately 10 chains of main roadway was more or less completely blocked and, so far as transport was concerned, utterly useless. Due to this condition a circuitous route had to be employed for the haulage of coal, however, with the better condition now prevailing a considerable improvement may be expected in this direction. A better standage for water has been secured at the foot of dip from the surface, there being sufficient sumpage for a two days' growth of water, which is pumped to the surface by means of a two-stage Lee Howl pump motivated by a 30 h.p. motor.

Moynihan's Lease, Mangakara, Ohura (D. Moynihan (Deputy), Mine-manager).—Good work has been done on this area, although coal-production has been occasionally retarded due to an insufficiency of water-supply during dry spells. In an effort to eliminate these short stoppages, the storage capacity

of the dam has been increased and the water from a second creek diverted into the channel leading into the dam. Towards the end of the year additional stripping of overburden was undertaken and there is sufficient coal uncovered to give continuity of supply for the current year.

Aria Colliery (A. Pratt (Deputy), Mine-manager).—The area from which coal is being won lies between what appears to be two faults approximately 4½ chains apart, one of these being just outbye from the entrance to the mine which has been opened by driving a level on the strike of the seam to contact the other fault inbye. About 2 chains from entrance a dip was broken away and driven for about 4½ chains before contacting the inside fault, which runs diagonally across the dip of the seam. From the dip three levels (from which the major portion of the output has been secured this year) have been driven outwards, and by the end of the year all three had contacted the fault line outside the drive entrance. It is now intended to put down a new dip drive between the outside fault and the present entrance to mine so that fresh development work may be put in hand and at the same time enable work to the dip below the bottom level to be continued.

Stockman Colliery (H. W. Jones (Deputy), Mine-manager).—This mine, operated by 2 miners, continued production during the year for an output of 652 tons. Means of access to this mine is somewhat difficult, depending upon the conditions prevailing on the river. The output shows a decrease of 96 tons for the reviewed period.

Fougere's Opencast, Ohura.—Coal production has been continued by two parties operating on two different sections of the property. These parties are made up of 2 men each working on coal varying from 3 ft. 6 in. to 4 ft. in thickness. The total output from both is only 1,874 tons for the year.

Waitewhena State Opencast (S. T. Smith (Permit), Mine-manager).—The year's output was won from No. 2 Area, being consistent daily outputs of between 150 and 160 tons. To meet the demand for coal for industrial purposes a coal-crusher was installed at the mine bins and the majority of the output has been crushed since October, 1947. Two 8-ton motor-trucks are employed transporting the coal from the face to the mine bins, a distance of approximately 30 chains. Two 4-ton, four 4½-ton, and three 5½-ton motor-trucks are engaged transporting the coal from the mine bins to railway siding twelve miles away.

Due to weather conditions affecting local road-metal contractors during the winter months, road-metal was scarce and access road conditions suffered at the mine during this time. Additional labour was required in maintaining the access roads, this delaying the completion of the siding screens and storage bin as well as the flying-fox installation.

Earthwork plant for stripping operations at present used consist of five Caterpillar D8 tractors, 1 H.D. 14 Allis Chalmers tractor, one International tractor, six blades, three 12-cubic-yard carryalls, two rooters, one ¾-cubic-yard shovel excavator, and two 3-cubic-yard motor trucks.

Coal stripped is approximately 12,000 tons, with a fair area of ground with reduced overburden.

Rotowaro Rescue-station

The number of trained men on the station roster is 86, this including 12 men trained at Benneydale. For the purpose of training the men at Benneydale the Station Superintendent travels weekly to the mine. Twelve new men have been trained, of these 2 being certificated mine-managers. Ten applications for assistance have been made to the Station Superintendent, five of these coming from the MacDonald Mine, one from Rotowaro, two from Pukemiro, and two from Benneydale; in rendering the assistance the services of 52 trained men were required, eloquent testimony, if any was required, of the value of the station so far as fire-fighting is concerned.

Huntly School of Mines

It has to be recorded that the Director of the School, Mr. J. E. Gomersall, died towards the end of the year. Although in failing health, he continued to hold classes regularly, and a fair number of students availed themselves of the educational facilities afforded them under his tuition.

Fatal Accidents

I am very pleased to be able to report that no fatal accidents resulted from the year's operations.

Serious Non-fatal Accidents

Twelve serious accidents have been reported during the year :—

On 15th January at Kimihia State Opencast an employee, B. Holland, was struck a glancing blow on the head by a falling wire rope. Upon examination it was ascertained that no fracture had resulted, and he was able to resume work in seven days.

On 12th February at Kemp's State Opencast, Glen Massey, whilst engaged on the coal-screening plant at bins, W. Menzies got his right arm caught by driving-belt, causing serious lacerations to same.

On 14th February at Kimihia State Opencast an employee, T. E. Douglas, whilst assisting in the assembly of a tractor, had the top joint of the ring-finger (left hand) crushed, necessitating the amputation of same.

On 23rd April at Wilton State Mine, F. Hale sustained injuries to his face as a result of being caught by the blast from a shot hanging fire; fortunately the injuries were not so serious as was at first suspected. The use of fuse and ordinary detonator was condemned.

On 9th May at Mangapehi State Mine, as a result of being affected by carbon monoxide coming from a heating area, a miner, T. M. Hall, was overcome and had to be conveyed to hospital for observation, where he was confined for two days before being allowed to go to his home.

On 13th June at Mangapehi State Mine, R. Ormsby, employed as a trucker, when caught by a runaway full box against the ribside sustained bruising of the abdomen and possibly fractured pelvis.

On 18th June at Taupiri Coal-mine a miner, M. Joyce, had his left hand fractured when he was caught by a runaway empty skip.

On 23rd June at Waro Coal-mine, due to having his head jammed between a bar and an empty skip, a trucker, P. Wei, sustained a fracture of his skull.

On 21st July at Pukemiro Colliery a screen worker, T. Awa, had his right wrist caught between two full skips, due to which the wrist was fractured.

On 14th August at Taupiri Coal-mine an employee, T. Cooper, whilst dressing in the change-house at the mine slipped and fell on the corner of a seat and as a result sustained a fracture of the sixth right rib.

On 22nd September at Wilton State Mine a deputy, J. Williamson, received facial burns when he opened a tin containing carbide; he had a lighted carbide lamp on his head at the time. Fortunately the burns were of a minor nature.

On 13th October at Mangapehi State Mine injuries to the left foot were received by A. Robinson, trucker, when, after having lifted a derailed box on to the track, he allowed the box to run forward over his foot. Examination revealed fractured phalanges of the second and third toes of left foot.

Reports regarding Dangerous Occurrences in Mines

On 2nd January at Tatu State Mine a heating in the South Heading was subdued by cutting an airway over a fall of stone under which an incipient heating existed. Allowing the heat a way of escape cooled off the area.

On 6th January at Pukemiro Mine a fire in the Morgan's Dip Section was isolated by the erection of two stoppings.

On 18th January at Mangapehi State Mine in an old heading in No. 2 East Panel a heating was located; this was cooled off with applications of water.

On 3rd February at Mangapehi State Mine a fire was discovered at the foot of a stopping in a cut through between intake and return airways of No. 2 Panel. This fire was brought under control by means of water applied under pressure. A new stopping required to be erected.

On 11th February at Mangapehi State Mine traces of gob stink were detected on return side of a large fall which had occurred in the goaf where a pillar had been extracted in No. 2 East Panel. The area was sealed off by means of stoppings.

On 19th February at Renown Mine it was reported that a heating had occurred in the last place on return side, West Heading Section; the place was isolated through the erection of stoppings.

On 13th March at Taupiri Coal-mine a fire which occurred in Brown's Section, No. 3 Mine, was effectively brought under control through isolating stoppings being erected.

On 25th March at Mangapehi State Mine a fire was discovered in the barrier heading in No. 3 Panel, No. 1 East Side Section; this was extinguished by application of water.

On 24th March at Wilton State Mine a small inrush of water from the surface partially flooded the No. 4 West Heading Section; the amount of water entering the mine was minimized through cutting diverting channels on the surface and a pump installed, enabling the section to be dewatered in a few days.

On 15th April at Taupiri Coal-mine a heating on the east side of Ollis's Dip, No. 1 Mine, was isolated by means of two stoppings.

On 4th May at MacDonald Mine in the E2 Left Panel a heating developed under a fall; to successfully deal with this seven stoppings were required to be erected.

On 5th May at Renown Colliery in the last working-place in No. 4 East Panel Section indications of heating were detected; the heating was effectively dealt with through the erection of one stopping.

On 9th May at Mangapehi State Mine in the No. 2 East Section a fire burned through a gob stopping; this necessitated retreating to and behind a new line of stoppings which had been erected. During these operations a workman was overcome by fumes and was removed to hospital.

On 12th May at Renown Colliery in the first working-place of No. 2 West Panel, Old Mine, a small percentage of firedamp was discovered; resulting from this, as a precautionary measure, electric safety-lamps have been introduced throughout the section.

On 12th June at Waro Coal-mine a heating was located in the gob at the No. 13 Level on east side of the mine. The area was sealed off.

On 12th June at Pukemiro Mine six stoppings were required to seal off an area in the No. 1 Right Section, South Mine, where a heating had occurred in a fallen roadway on left side of the rope end of the haulage road.

On 23rd June at Taupiri Coal-mine an inrush of water into Ollis's Dip Section, No. 1 Mine, resulted from the creek breaking in from the surface. Due to the extent of flooding, the Callaghan's Dip Section was unable to be worked.

On 3rd August at Pukemoro Mine a fire which broke out in the No. 2 Right requiring the assistance of the Rescue-station equipment was ultimately effectively dealt with by sealing it off.

On 11th August at Mangapehi State Mine a fire was discovered in the timber lagging over the main dip near the pumping at bottom of the dip. At this point a large quantity of loose coal was supported by the lagging. The heat generated set fire to the timber. The fire was quenched with water and brought under complete control.

On 28th August at MacDonald Mine in E Jig Section a fire was caused through a defective stopping. The assistance of the Superintendent, Rescue-station, was requested in the subduing of this fire. Upon inspection it was found that two stoppings were necessary to seal the affected area off. During the process of sealing, six pairs of miners were withdrawn from their working-places, but five pairs were able to resume work the following day.

On 29th August at Taupiri Coal-mine in the No. 4 Panel, Callaghan's Dip Section, a fire was discovered on the goaf side of a stump that was extracted. As the result of this fire this panel had to be sealed off for the time being.

On 1st October at MacDonald Mine three stoppings were necessary to seal off an area where a heating was taken place in the E Dip Pillar Section. The necessary stoppings were erected, and soon after the area was reported clear.

On 3rd November at Mangapehi State Mine a fire of maximum intensity was discovered about midway between the Nos. 1 and 2 East Levels. To effectively deal with this the assistance of the Superintendent, Rescue-station, was requested. During the period of dealing with this fire all men except those engaged on fire-fighting were withdrawn from the mine. It seems certain that this fire resulted from spontaneous ignition in the fallen top coal in the airway. Resulting from the nature of this fire it has been decided to have all loose or fallen coal cleaned up from these airways.

On 1st November at Glen Afton Mine fire-stink was detected coming from the goaf in the E2 First Panel pillars. To effectively isolate this area a fall of roof was secured and stoppings erected to seal the goaf.

On the 6th November at Wilton State Colliery it was reported that a brattice door had been accidently ignited through an employee passing through. This was effectively and satisfactorily dealt with.

Prosecutions

During the year four prosecutions were taken, two by the inspection staff, one by the Pukemiro Co., and one by the Renown Co.

The two cases taken by the management of the Pukemiro and Renown Cos. were taken at the instigation of the Inspector of Coal-mines, who considered that as a means of strengthening the hands of the managers concerned it was in their best interests from a disciplinary point of view to take action on their own account.

The case taken by the Pukemiro Co. was against a trucker, James Mati, who was found with smoking-material in his pocket whilst in the mine. This resulted in a fine of £5 with Court costs being imposed.

In the case of Renown the charge laid was against a Maori, Tarawhiti, who assaulted a deputy shot-firer whilst in the execution of his duties. This resulted in a fine of £10 and Court costs being imposed.

The two cases by the Inspector were :—

Firstly, that of K. L. Harvey, manager, Rangitoto Opencast Mine. The charge laid that on 16th April, 1947, he did fail to exercise daily personal supervision of the mine. On this count he was fined £2 and Court costs 10s.

The second case was that of M. Miller, deputy and shot-firer, Pukemiro Colliery, who neglected to see that all persons in the vicinity had taken proper shelter before the firing of a shot. For this omission he was fined £5 and Court costs 11s.

WEST COAST INSPECTION DISTRICT

(J. Adamson and L. C. Cook, Inspectors of Coal-mines)

Greymouth District

Liverpool State Colliery, Rewanui (L. F. O'Loughlin (First Class), Mine-manager).—Anderson Dip Section: Four pairs of colliers were employed partly in pillar-extraction and partly in the solid. Owing to the heavily fallen nature of the old roadways, recovery of pillars, particularly towards the bottom of the James Dip haulage road, was extremely difficult. A level driven in continuation of Kennedy's Dip was extended into Leech's Dip area, which was previously sealed off. It is proposed to prospect for the continuation of the seam beyond the fault encountered in this level which terminated all work on the eastern side of the Anderson Dip Section.

Kimbell West Dip Section: Six pairs of colliers continued throughout the year with splitting and pillar-extraction. The area to the rise of the Kimbell West Level, previously sealed up on account of fire, was reopened at the end of the year and two places were ready for production.

Morgan East and West Rise Sections: The prospecting drive in stone at the head of the Morgan West Main Level was driven approximately 5 chains. This work was stopped through inadequate ventilation until a return airway is provided. Prospecting-work continued in a strip of coal encountered in this drive. Pillar-extraction continued in the Nos. 2 and 3 Banks Morgan West Section, but owing to steep grades and old roadways this work was very difficult and costly to maintain. Nine pairs of colliers were employed in these sections.

No. 1 Bank, Morgan East, was practically finished at the end of the year, only 1 pair being employed.

No. 2 Bank, Morgan East, was reopened following a temporary sealing and 2 pairs of colliers were employed in the extraction of the pillars adjacent to the Morgan East Main Level.

Morgan West Dip: This section was advanced 15 chains to the dip and stopped in dirty coal, only about 3 ft. of coal remaining in the dip face. Two pairs of miners were employed in this section during the year, in the latter portion of which they were employed in the development of two levels to the south-east. These levels are approaching a borehole showing 25 ft. of coal.

Morgan East Dip (Middle Panel): Seven pairs of miners were employed on pillar-extraction and 2 pairs continuing with the development of the inbye side of this panel. The top panel in this section was sealed following a heating. The main Morgan East Dip Heading was stopped practically throughout the whole of the year pending the completion of extensive haulage alterations to Hadcroft's Dip haulage road. This work is now almost completed, and development work should recommence early in the New Year. Coal thickness to the east of the Morgan Dip heading thinned to approximately 5 ft. Coal in the dip heading face, however, was 16 ft. to 18 ft. in thickness.

During the year the steam endless haulage plant into No. 2 Mine was changed over to electric power and the work of widening Hadcroft's Dip for double haulage was completed and the 75 h.p. electric winch replaced with one of 120 h.p. At the foot of Hadcroft's Dip a new endless-rope haulage was also completed and by the end of the year was in operation.

Eighty-five men were employed on surface and 209 underground.

Strongman State Colliery, Nine-mile (G. K. Keown (First Class), Mine-manager).—No. 2 North Section: Development work was concluded in No. 2 Panel and development in No. 3 Panel was continued during the year. Little progress was made in the development of the main headings, which are now in the vicinity of No. 3 Borehole. These headings are already showing signs of stone bands, as indicated in No. 1 Bore. A borehole through the fault on the right-hand side of these headings encountered the seam being worked from No. 3 North Heading. A borehole was also put down in No. 2 Panel proving the bottom seam with the same characteristics as those in Bore No. 281. Twelve pairs of miners were engaged in this No. 2 North Section.

No. 3 North Section: Development work was continued between the Doherty and Bob faults, 8 pairs of miners being employed. Changes in the character and direction of grade made transport of coal from this section most difficult.

East Heading: Continuation of the heading was suspended until coal had been proved on the right and left-hand sides beyond the fault. One pair of miners was engaged on this work.

No. 1 South Section: Four pairs of miners were engaged on solid work and 3 pairs on pillar-extraction. Bad roof conditions are against maximum percentage extraction.

No. 2 Dip Section: Development work continued with 9 pairs of miners in the bottom seam from which good-quality coal was obtained.

Sixty-six men were employed on surface and 177 underground.

Blackball State Colliery, Blackball (J. Rarity (Second Class), Acting-Mine-manager).—At the beginning of the year a 70 h.p. endless-rope haulage was installed in place of the existing main and tail in No. 2 South Section.

Main Dip: Twin connections driven northerly were made from the Sump Section to the Main Dip through thin coal a distance of 4 chains. The seam thickened and the Main Dip and parallel airway have been extended a further 3½ chains in good coal. The seam is 12 ft. thick. Preparations were in hand at the end of the year to install an endless rope to the dip.

Sump Section: This dip has been developed for a further 5 chains in good coal. Little development has been possible to the south side due to the seam dipping sharply in that direction. The coal is 15 ft. to 18 ft. thick.

From the Sump Dip another dip has been driven to the south in the direction of No. 2 Borehole. This progressed to a distance of 4 chains. The dip is now 20 ft. beyond the borehole and the seam 10 ft. thick, the coal being of good quality.

No. 2 South: Development was carried on here for a distance of 3½ chains. For 1½ chains the coal was 12 ft. to 14 ft. thick and of fair quality. The seam then thinned out to 3 ft. when development was stopped. Connections were made by twin roads from Dunn's Dip to No. 2 South, the distance being 5½ chains. Part of the seam thinned to 5 ft. 6 in.

Dunn's Dip: The dip rose sharply for a chain and thinned to 6 ft. The seam then dipped over at a distance of 1¾ chains, and development stopped until a pump is available. The class of coal is fair.

Thirty-two men were employed on surface and 148 underground.

Blackball Creek Colliery (Balderstone and Party), Blackball (W. Balderstone (Underviewer), Mine-manager).—Operations consisted of splitting and extracting pillars left behind in the old Blackball Pty.'s workings in the top seam. There is 5 ft. of good-quality coal in this seam. Eight men were employed underground and 1 on the surface.

Briandale Colleries, Ltd., Ten-mile Creek (T. Howard (First-class), Mine-manager).—Work consisted principally of pillar-extraction in a small seam adjacent to the old Burnside Co-operative Mine. Two men were employed underground. Three men were employed transporting coal by locomotive from four mines in this gorge and 1 man employed on track-maintenance.

Wallsend State Colliery, Brunnerton (W. Richardson (Underviewer), Acting-Mine-manager).—No. 1 Dip Section: Development work was completed in this section and splitting of pillars resumed, Seven pairs of miners were employed. The undercast controlling the ventilation in this section was enlarged, permitting an increase in quantity of air by 5,000 cubic feet per minute.

No. 2 Dip: This section was dewatered after standing under water for a number of years. Development work was continued with 3 pairs of miners in this section.

No. 1 Slant Dip: Five pairs of miners were engaged in splitting pillars.

No. 2 Slant Dip: Three pairs of miners were employed in splitting pillars.

Extension Section: Five pairs of miners continued with the splitting of pillars.

During the year a new return airway was completed between the Slant Dip and No. 2 Dip Sections and the ventilation adjusted to meet the new conditions.

Thirty-two men were employed on surface and 137 underground.

Dobson State Colliery, Dobson (J. Quinn (First Class), Mine-manager).—Operations at this colliery consisted of development of the main dip haulage road. In No. 5 West Section a 20 ft. downthrow fault was encountered, but the workings progressed beyond this with the prospects indicating that a good section can be anticipated. East of the main dip the grade is very steep and is now actually 1 in 1. Development of this steep section was shelved pending an improvement in the ventilation, which is in progress. Improvements to the ventilation during the year involved the widening of the main fan drift for the whole distance, effecting a definite improvement in the quantity of air circulating. The work of enlarging the main airways and the clearing of falls and other obstructions was continued. A new electrically driven pump was installed on the main dip, effecting a considerable saving in the consumption of compressed air.

Forty men were employed on surface and 176 underground.

Paparoa State Colliery, Roa (J. J. Queen (First Class), Mine-manager).—Aerial Section: During the year a connection on the rise side was made with Waterfall Creek. Most of the output from the mine was won by the splitting and extraction of pillars by 4 pairs of miners.

West Section: Three pairs of miners were employed during the year on the recovery of roadways and splitting of pillars. A new intake airway was driven from the main haulage tunnel to the level of the foot of what is known as Cain's Jig.

Sixteen men were employed on surface and 54 underground at this mine.

Co-operative Mines in the Grey District

Spark and Party's Mine, Rewanui (J. Allan (Underviewer), Mine-manager).—Development work was completed to the north-west during the year and pillar-extraction commenced adjacent to the fault at the inbye end of the main roadway. The coal maintained an average thickness of 8 ft. to 9 ft. Seven men were employed in the mine and 2 on the surface.

Old Runanga Mine (O'Brien and Party), Rewanui (E. W. Kennedy (Underviewer), Mine-manager).—Pillar-extraction continued on the west side of the main level. Seven men were employed underground and 3 on the surface.

Moody Creek Mine (Wright and Party), Donollie (R. J. Ewen (Underviewer), Mine-manager).—Work consisted of the development of 9 ft. of coal on the west side of the fault running parallel with the dip haulage road. The coal was of excellent quality. During the year a new surface haulage and bins were erected at the railway-line adjacent to the mine portal. Nine men were employed underground and 1 on the surface.

Gold light Mine (Williams and Party), Rewanui (A. Crawford (Underviewer), Mine-manager).—Development work was continued throughout the year to the left of the dip haulage road. The coal was of excellent quality averaging 8 ft. in thickness. Eight men were employed underground and 1 on the surface.

New Point E. Party's Mine, Dunollie (E. Patterson (Second Class), Mine-manager).—Output was won mostly from development to the dip in coal averaging 6 ft. in thickness. Coal was of excellent quality. Five men were employed in the mine and 1 on the surface.

Hilltop Mine (Kiwi Coal-mining Party), Ten-mile (R. Scott (Underviewer), Mine-manager).—A fault encountered on the western side of the dip haulage prevented any further development work in this direction and splitting of pillars in a restricted area on this side was commenced prior to pillar-extraction. Nine men were employed underground and 1 on the surface.

Boote and Party (Kaye's), Ten-mile (R. J. Bowman (Underviewer), Mine-manager).—Work consisted entirely of pillar-extraction throughout the year. Roof conditions were not good, necessitating constant care and adequate timbering. A good percentage extraction, however, was obtained. Three men were employed underground and 1 on the surface.

Hunter and Party's Mine, Dunollie (N. Forsyth (First Class), Mine-manager).—Development work continued to the left of the dip haulage road. Eight chains from the dip haulage road a small displacement was encountered in the seam. This was pierced, however, proving the coal to be 9 ft. thick beyond the fault. The workings reached a distance of 4 chains beyond this fault by the end of the year. Seven men were employed underground and 2 on the surface.

Schultz Creek Mine (Gould and Co., Ltd.), Twelve-mile (D. Cameron (Deputy), Mine-manager).—Output was won solely from pillar-extraction from coal 2 ft. to 3 ft. in thickness. Four men were employed underground and 1 on the surface.

Cliffdale Mine (Stuart and Party), Ten-mile (A. Coppersmith (Second Class), Mine-manager).—The main dip heading encountered a fault after having been driven 6 chains and development work proceeded on level course to the right in a southerly direction. This, however, also struck a fault, and development work ceased. Pillar-extraction commenced on several pillars adjacent to this fault. The coal was of very good quality lying at an average grade of 1 in 3. Six men were employed underground and 2 on the surface.

Bellvue Mine, Rapahoe.—No work was done at this mine during the year. It is hoped, however, to resume operations on the completion of a new access road from the main highway.

Jubilee Mine (Tinning and Party), Rapahoe (P. Hassan (First Class), Mine-manager).—During the first half of the year pillar-extraction continued in No. 1 Panel. However, following a serious fire to the main surface haulage winch and bins, production ceased and will not commence until the new access road is completed from the main highway. Twelve men were employed underground and 4 on the surface during the first half of the year.

Coaldale Mine (Wafer and Party), Rapahoe (E. Broad (Deputy), Mine-manager).—Development work was completed during the year and pillar-extraction commenced during the latter part of the year. Thickness of coal averaged approximately 4 ft. These workings were situated on a small area of coal adjacent to the old Bellvue Mine, worked by Hadcroft and party. Four men were employed underground and 1 on the surface.

Cliffside Mine (Moore and Party), Nine-mile (H. Hadcroft (Underviewer), Mine-manager).—Development work to the outcrop on the southern side was completed during the year, and preparations at the end of the year were in hand to commence pillar-extraction. Coal averaged 12 ft. in thickness. Seven men were employed underground and 3 on the surface.

Braehead Mine (Boote and Party), Dunollie (G. Gaskell (Second Class), Mine-manager).—Output was won solely from pillar-extraction in good-quality coal 5 ft. to 6 ft. in thickness. Seven men were employed underground and 1 on the surface.

Halliday and Party's Mine, Dunollie (T. Halliday (Deputy), Mine-manager).—Working-conditions in this mine were very difficult, and owing to the extremely bad roof conditions, accompanied by rapid changes in extent and direction of grade, work was abandoned and the mine closed down early in the year. Three men were employed underground and 1 on the surface.

Harrison and Party's Mine, Ten-mile (T. Adamson (Underviewer), Mine-manager).—Development continued in 5 ft. to 6 ft. of coal in a narrow strip of coal between the bottom horse level and the fault on the eastern side and ahead of the main dip haulage road. Six men were employed underground and 1 on the surface.

Exhibition Mine (Hassan and Party), Eight-mile (P. Hassan (First Class), Mine-manager).—Work at this mine was more in the nature of prospecting prior to opening up a new lease recently granted to this party, thickness of coal being 9 ft. Four men were employed underground and 1 on the surface.

Reefton District

Doran's Mine (J. Doran), Boatmans.—A little prospecting work was done at the beginning of the year, but this was abondoned and the mine closed down.

Alborn's Mine (V. W. Alborn), Capleston (R. Alborn (First Class), Mine-manager).—Production was confined in this mine throughout the year principally to pillar-extraction in Nos. 1 and 2 seams. Seven men were employed underground and 1 on the surface, but during the latter portion of the year this mine temporarily ceased operations and the men were transferred to some opencast work situated in Burke's Creek, Boatmans, where 6 men were employed.

Kleen Mine (Opencast, Archer Bros.; Underground Mine, Alborn's) (P. McCormack (Deputy), Mine-manager).—Pillar-extraction was continued in a vertical seam, the coal averaging 12 ft. in thickness. Four men were employed underground and 2 on the surface in a small opencast mine.

Coghlan's Freehold Mine (J. F. Coghlan), Capleston (J. J. Coghlan (Deputy), Mine-manager).—Output was won from the remaining pillars in this mine on the rise side of the main level. The number of men employed underground was 3 and 1 on the surface.

New Imperial Mine (Coghlan's Lease), (Rollerson and Blom), Capleston (E. F. Rollerson (Second Class), Mine-manager).—A level stone drive some 200 ft. to 250 ft. long was driven to intersect No. 4 seam in this locality. The seam was encountered and proved to be 20 ft. to 25 ft. thick and of good quality. A level was driven in coal in a south-westerly direction, from which it is later intended to drive an incline to the surface for a return airway. Three men were employed underground and 1 on the surface.

Hillcrest Top Mine (E. Melbom), Waitahu (E. Melbom (Deputy), Mine-manager).—Pillar-extraction ceased during the first half of the year and development was recommended in the main level on the Waitahu lease, the level having been stopped for some considerable time. The seam is 4 ft. 6 in. thick. Five men were employed for the greater part of the year underground. This was later reduced to 4.

Griggs and Parry's Mine (Waitahu Coal-mining Syndicate), Waitahu (S. Fairest (Deputy), Mine-manager).—Production was obtained partly from development work on Waitahu (N.Z.) Collieries lease No. 3432 and partly from Griggs and party's lease No. 9325, the coal averaging 6 ft. in thickness. A new dip haulage was installed from the surface, effecting a marked improvement in the haulage problem. Seven men were employed underground and 1 on the surface.

Dauntless Mine (Pyramid Coal-mining Co., Ltd.), Waitahu (G. H. Millar (First Class), Mine-manager).—The output was won principally from development in a north-easterly direction on level course and a small amount from dip development to the west. The coal is of excellent quality averaging 15 ft. in thickness. The main haulage winch was replaced by an improved type, thus improving haulage facilities from this mine. Twenty men were employed underground and 4 on the surface.

New Pyramid Mine (Crown Lease), (Pyramid Coal Co., Ltd.), Waitahu (G. H. Millar (First Class), Mine-manager).—No work was done at this mine during the year, the mine being used as a pumping-pit.

Burke's Creek Slate Mine, Reefton (C. D. Buist (First Class), Mine-manager).—Output was won from pillar-extraction in a small panel of the slant dip. This was exhausted and section sealed at the end of the year. The remaining output was won from development in a north-easterly direction passing the line of the main dip and from a new dip recently started to test the extension of the seam. North-east development proved the extension of the seam in good coal 6 chains past the line of the main dip. A connection is being driven from the bottom level to connect with the present termination of the main dip haulage. To maintain uniform grade it was necessary to drive the greater portion of this connection through stone. Before completion, 120 ft. remains to be driven. The repairing and reconditioning of roadways and airways was retarded through shortage of labour. At the beginning of the year a new main dip electric winch and man trolley were installed and placed in operation. A new building housing the stores with mine-manager's office was erected during the year. A start was made with the erection of a new concrete bath-house. Thirty-six men were employed underground and 16 on the surface.

Morrisvale Opencast (Morrisvale Lease), (W. J. Morris), Reefton.—An intermittent output was obtained from No. 4 seam during the first half of the year. This mine was later taken over by the Welcome Syndicate and renamed the Welcome Opencast Mine, the manager of which is L. J. Story (Deputy). Four men were employed on the surface.

Perfection Valley Mine (Morrisvale Lease), Reefton (J. Clark (Deputy), Mine-manager).—A small output was obtained from pillar-extraction in No. 3 seam adjacent to the old Perfection Mine during the first half of the year. These workings were abandoned and the mine was closed down. Four men were employed underground and 1 on the surface.

Pyramid Section (Morrisvale Lease), Reefton (G. H. Millar (First Class), Mine-manager).—A small output only was won from intermittent work during the first half of the year. This mine is now closed down. Two men were employed underground.

Higrade Mine (Morrisvale Lease), Reefton (D. Wight (Underviewer), Mine-manager).—Work consisted principally of the extraction of pillars during the first half of the year in No. 2 seam, which in this area is practically vertical. Work at this mine was suspended in June and the men transferred to the Matchless Mine. Three men were employed underground and 1 on the surface.

Matchless Mine (Morrisvale Lease), Reefton (D. Wight (Underviewer), Mine-manager).—This mine was reopened in the latter half of the year after having been closed for approximately fifteen years. The output was won principally from development of No. 3 seam, the coal being 6 ft. thick. Six men were employed underground and 2 on the durface.

Ferndale Coal Syndicate's Mine (Lockington's Lease), Reddale Valley, Reefton (J. Etheredge (Second Class), Mine-manager).—Work consisted principally of driving through old workings in No. 2 seam. Recovery of coal was difficult owing to the pillars left in previous workings being small. The present work also is being continued with a view to proving a triangular block believed to contain coal between the top sections of the old Burke's Creek Mine and the present Ferndale work. Six men were employed underground. During the first half of the year the work consisted of attempting to reopen No. 4 seam farther up the Reddale Valley. However, due to extremely difficult roof conditions it was found impossible to continue with this mine and work was abandoned.

Burnwell Mine (D. Hamill), Reefton (R. McDonald (Second Class), Mine-manager).—Production was obtained solely from development in a south-easterly and north-easterly direction in No. 4 seam. A new roadway has been completed to the surface, providing a new return airway. This work has resulted in an appreciable improvement in the ventilation of the mine. Fifteen men were employed underground and 1 on the surface.

Central Mine (Redpath and Hamill), Reefton (W. Hansen (Deputy), Mine-manager).—Output was won solely from development. It is proposed to develop a new area to the dip from the main level of the present workings. Six men were employed underground and 1 on the surface.

Terrace Mine (Terrace Coal Mine, Ltd.), Reefton (E. J. Richards (Second Class), Mine-manager).—Output was won solely from development work in a north-easterly direction in No. 4 seam and from prospecting carried out in No. 2 seam, access to which is obtained from a stone drive from the terrace workings in No. 4 seam. In No. 4 seam the workings were extended and holed through to the outcrop in the Reddale Valley, thus effecting a considerable improvement in the standard of ventilation. Fourteen men were employed underground and 1 on the surface.

Defiance Mine (McClatchie and Co., Ltd.), Murray Creek (R. McMahon (Underviewer), Mine-manager).—Production from this mine was confined to development work in the first half of the year. Operations were later suspended. Five men were employed underground and 1 on the surface.

Butler's Section.—No work was done in this section during the year.

Clele Mine (Alborn's), Merrijigs (R. V. Alborn (First Class), Mine-manager).—Work was confined to the extraction of pillars during the first half of the year, 1 man being employed underground. Operations were suspended through lack of labour.

Nicholls' Mine, Capleston (W. Nicholls (Deputy), Mine-manager).—Output was won from development work in approximately 4 ft. of coal. Four men were employed underground.

Banks' Opencast Mine (Eklund and Party), Waitahu (A. E. Eklund (Underviewer), Mine-manager).—Good production was maintained from this mine during the year, the seam worked being No. 4, adjacent to the Morrisvale boundary. Nine men were employed.

Star Mine (Lewis and Party), Murray Creek (J. Lewis (Permit), Mine-manager).—This mine was closed down early in the year. Difficult conditions predominated and it was considered advisable to cease operations. Two men were employed at this opencast mine.

Royal Coal Syndicate, Rainy Creek (C. N. Curtis (Deputy), Mine-manager).—Development terminated during the year, and the output in the latter portion of the year was obtained from splitting and extracting existing pillars. Four men were employed underground.

Turner and Party's Opencast Mine, Murray Creek (J. Lewis (Permit), Mine-manager).—This mine is now operated by Lewis and party. Production was obtained by opencasting from an area which was previously worked by underground methods. The coal is of fair quality. Two men were employed.

W. G. Chandler's Opencast Mine, Murray Creek (W. McCaffrey (Deputy), Mine-manager).—The coal from this mine was won from an area previously worked by underground methods and abandoned for some considerable time owing to fire. Stripping is done by bulldozer and coal loaded direct into lorries by mechanical shovel. Five men were employed.

Golden Point Mine (Blom and Rollerson), Reefton (E. F. Rollerson (Second Class), Mine-manager).—Output was won from the extraction of a few remaining pillars during the early part of the year, and later the mine closed down after all available coal had been exhausted. Two men were employed underground.

Garvey Creek State Mine, Reefton (J. J. Cunningham (First Class), Mine-manager).—Production from this mine was obtained from a vertical seam on the north-west and south-east sides of Garvey Creek. Thickness of coal varies considerably and is bisected by a sandstone band which also varies considerably in thickness. A surface incline haulage road is in the course of construction on the north-west side of Garvey Creek for the purpose of working the top portion of the vertical seam on this side by opencast method. The temporary storage bins erected in the initial stages of development were being replaced by the erection of a permanent structure, the capacity of which will be 100 tons. Five men were employed on the surface and 19 underground.

Buller District

Mitchell's Mine, Charleston.—No work was done at this mine during the year.

Warne's Mine, Charleston.—No work was done at this mine during the year.

Bowater and Bryan's Mines, Charleston.—Three separate mining parties worked on this lease during the year—viz., Rata Collieries (W. Powell (Permit), Mine-manager), Nile Hydro Syndicate (E. Rooney (Quarry Foreman), Mine-manager), and T. N. Mouat (E. McKenney (Deputy), Mine-manager). The coal and overburden are generally removed by hydraulic means, with the exception of Mouat's Mine, where the overburden only is removed by hydraulic means and the coal by hand. The combined output from these mines during the year was 42,140 tons.

J. Powell's Lease, Charleston.—No work was done at this mine during the year.

Allan's Mine, Charleston (E. Rooney (Quarry Foreman), Mine-manager).—This mine was operated by the Nile Hydro Syndicate during the year, but only a small output was won from this area. Five men were employed.

Moynihan's Opencast Mine, Charleston—(E. Rooney (Quarry Foreman), Mine-manager).—This mine was operated by the Nile Hydro Syndicate. Practically the whole of the operations by this syndicate during the year were confined to this area. Five men were employed.

Rata Collieries Opencast Mine, Charleston—(W. Powell (Permit), Mine-manager).—Production commenced on this company's Crown lease in the latter half of the year, coal being produced by hydraulic means. Five men were employed.

Sinclair's Opencast Mine, Charleston—(E. Rooney (Quarry Foreman), Mine-manager).—A small output was won from this lease by the Nile Hydro Syndicate, 5 men being employed.

Hillside Mine (Gemmell and Bennett), Waitakere, Charleston—(R. Bennett (Deputy), Mine-manager).—A small output was won by 3 men by opencast methods.

Brighton Mine (Hunter's), Brighton—(W. Cairns (Deputy), Mine-manager).—Output was won solely from development places, the thickness of coal being 16 ft. The coal was mined by hydraulic means. Two men were employed underground and 1 on the surface.

Glencrag Mine (Glencrag Coal Co.), Buller Gorge—(J. S. Blyth (Underviewer), Mine-manager).—Production was obtained mainly from development work, but towards the latter part of the year pillar-extraction commenced on the western side of the mine owing to several places encountering a fault. Nine men were employed underground and 1 on the surface.

Glencrag Opencast Mine (Glencrag Coal Co.), Buller Gorge—(J. Chester (Deputy), Mine-manager).—Production was obtained from an area of coal adjoining the Glencrag underground mine. The coal averages 10 ft. thick. A bin was being constructed on a low level in order that the seam may be exploited by water-power. Seven men were employed.

Coal Creek Co-op. Party's Mine, Seddonville—(R. Mulholland (Deputy), Mine-manager).—The output was again won solely from solid work. A connection was made with the old Mokihinui Coal Co.'s workings. Towards the end of the year work consisted mainly of recovering coal in these old workings by cleaning out old roadways and splitting through existing pillars. Six men were employed underground and 1 on the surface.

Cardiff Coal Co., Ltd., Mokihinui—(J. Simpson (Deputy), Mine-manager).—The output was won solely from pillar-extraction, the coal being mined hydraulically. Three men were employed underground and 1 on the surface.

Hydro Coal-mines Ltd., Seddonville—(J. Boyd (Underviewer), Mine-manager).—The output was won solely from pillar-extraction. Six men were employed underground and 4 on the surface.

Charming Creek-Westport Coal Co., Ltd., Ngakawau—(R. J. Wearn (First Class), Mine-manager).—In the North-west Section 2 pairs continued on development and 4 pairs on pillar extraction. In the North-east Section 2 pairs were on development work and 1 pair on pillar-extraction. In the No. 2 West Section 4 pairs of miners were engaged in splitting and preparing to extract pillars. In No. 3 West Section 2 pairs of miners were extracting pillars. On the east side of the main headings 2 pairs of miners were on development. The places were travelling in an easterly direction where the coal is 12 ft. thick. This thickness was not previously expected, it being thought that the seam would be much thinner. A stone drive on the southern side of the present workings was advanced approximately 120 ft. to provide improved transport facilities and development of the seam on the eastern side. Thirty-five men were employed underground and 22 on the surface.

Westport-Cascade Mine, Cascade Creek—(W. Brown (First Class), Mine-manager).—Pillar-extraction was continued in the Mill Creek and Durkin's South Sections, 6 miners being employed. Development work was discontinued towards the end of the year until a new water-supply from a higher level could be obtained. Construction of the necessary water-race was proceeding at the end of the year. Eleven men were employed underground and 7 on the surface.

Westport Coal Co., Ltd., Denniston Mine—(R. Marshall (First Class), Mine-manager).—Pillar-extraction was pursued in the whole of Forsyth's Section, including the Third South and Fourth South, Nine Box Jig, Fourth North, and Rope-end panels. The work in the Nine Box Jig Section, however, proved disappointing, exceptionally bad roof conditions, stone bands, and intrusions being encountered. In the Waterloo Section, pillar-extraction was pursued also. In the Extension Section, splitting and extraction of pillars was continued. The output from the colliery during the year consisted of 57,518 tons from pillar-extraction and 21,507 tons from solid work. One hundred and ninety-four men were employed underground and 74 on the surface.

Aerial Ropeway to Cook's Lease.—Production from Cook's lease area has not yet commenced owing to the non-completion of the means of transport.

Westport Coal Co., Ltd., Millerton Mine.—(A. Openshaw (First Class), Mine-manager).—Mine Creek Area: Five pairs of colliers were engaged solely on pillar-extraction from the Third West, Sixth West, Pollock's Level, and North-east Sections.

Old Dip Area: Four pairs of colliers were engaged on pillar-extraction in Settlement Section and 3 pairs in the lower old dip. The coal was produced mainly from splitting and extracting of existing pillars.

The policy of forming artificial panels by means of concrete stoppings as a means of controlling the fire hazard was continued with satisfactory results. Forty-one men were employed on the surface and 69 underground.

Stockton State Colliery, Ngakawau (G. Gilbert (First Class), Mine-manager).—Fly Creek Section: Operations were confined to pillar-extraction under very wet conditions. It is hoped to recover a fairly large number of pillars of good coal in McCabe's Jig Section. Preparations are being made to recover coal from the east area by hydraulic means. A storage bin was being prepared, and from a point close to this area it is expected to recover 12,000 tons of good coal by opencasting. In the Nos. 4 and 5 Sections, pillar-extraction was continued.

Webb Mine (D. Hill).—Development at this mine was continued satisfactorily, the main headings having been advanced 40 chains from the entrance. During the year development was completed in Nos. 1, 2, and 3 Panels and pillar-extraction commenced. Very little extraction will be possible in No. 2 Panel. It is anticipated that this will apply to No. 3 Panel also, owing to the heavily water-laden swamp on the surface. In the old mine section adjacent to the Webb Mine pillar-extraction was also continued.

"*E*" *Hill Opencast Mine*.—Opencasting was continued by mechanical means and very satisfactory results were obtained. The output was to the order of approximately 700 tons per day maintained throughout the year. Extensive repairs and renewals were made on the loco. road during the year, over one mile of track being entirely relaid. Extensive alterations and repairs were almost completed on the main bin at Ngakawau. An up-to-date bathhouse, situated at No. 3 Loop, on modern lines was erected and was in use for the greater part of the year.

Comet Mining Party's Mine, Inangahua (P. Pupich (Permit), Mine-manager).—Very little output was won from prospecting operations at the beginning of the year. This mine has now closed down and is abandoned, Two men were employed.

Paine Bros.' Mine, Buller Gorge (N. B. Paine (Underviewer), Mine-manager).—Coal is won solely by opencast methods, embracing the recovery of coal left behind in pillars by former underground mining. Eight men were employed.

Rahui Mine (Buller Coal Mining Co.), Buller Gorge (J. H. Chandler (Deputy), Mine-manager).—Pillar-extraction continued by hydraulic means in coal averaging 12 ft. in thickness. Two men were employed underground and 1 on the surface.

Heaphy's Opencast Mine, Buller Gorge (J. A. Gilroy (Deputy), Mine-manager).—Production was obtained partly from underground work and partly from opencasting. Owing to the party's inability to procure a bulldozer, underground operations were adopted to maintain an output and at the same time provide an extension to the existing flume to make possible the fluming of coal from the furthermost part of the lease. Coal is of good quality and ranges up to 25 ft. in thickness. Three men were employed underground and 2 on the surface.

Nelson District

Owen Colliery (Owen Collieries, Ltd.), Owen River (C. Taylor (Deputy), Mine-manager).—The output was won principally from development of two levels in low coal 1 ft. 6 in. to 2 ft. in thickness. Towards the latter end of the year, however, 1 pair miners was placed on pillar-extraction near the outcrop. Seven men were employed underground and 1 on the surface.

Six-mile Mine (J. Gillespie), Murchison (J. Gillespie (Permit), Mine-manager).—The output was won by 4 men working a vertical seam of irregular thickness. Three men worked underground and 1 on the surface.

Strathmore Mine (R. E. F. O'Rourke), Murchison (R. E. F. O'Rourke (Permit), Mine-manager).—A very small output was won from a 4 ft. seam of good-quality coal.

Westhaven Mine (G. and A. H. Wynn), Mangarakau, Collingwood (P. Hart (Deputy), Mine-manager).—Development was continued on level course right and left of the crosscut dip. The seam averaged 5 ft. in thickness and is of fairly good quality. Six men were employed underground and 2 on the surface.

Victory Mine (R. H. O'Brien), Glenhope.—No coal was won from this mine during the year and the mine was abandoned.

Whaririki Mine (McHardy and King), Puponga (A. J. McHardy (Second Class), Mine-manager).—A small quantity was mined by prospecting operations in a seam 5 ft. thick. Two men were employed underground.

Fatal Accidents

One fatal accident occurred during the year. On 10th March, 1947, A. J. Campbell, shiftman, Liverpool Colliery, was killed instantly when a fall of coal dislodged two sets of timber which struck him on the head and back. Death was due to fracture of the base of skull and extensive injuries to base of neck.

Serious Non-fatal Accidents

Twenty-two serious accidents occurred during the year:—

On 27th January, 1947, Luigi Viol, shiftman, Wallsend Colliery, was struck by a falling bar and sustained a fracture of the second and third transverse lumbar vertebræ.

On 13th February, 1947, Kevin Rushton, surface ropeboy, Burke's Creek Colliery, sustained a simple fracture of the right arm when shunting trucks at the mine mouth.

On 24th February, 1947, Charles Wesley, miner, Wallsend Mine, was struck on the back of his right hand by a falling lath, sustaining a fracture of fourth metacarpal.

On 11th March, 1947, R. McKenzie, shiftman, Burke's Creek Colliery, when assisting to shunt some full trucks in a lay-bye sustained compound fracture of the toes of the right foot.

On 14th April, 1947, Norman Gourdie, trucker, Dobson Colliery, fell and struck his left shoulder on a rail. It was later ascertained that he suffered a fracture of left scapula.

On 16th May, 1947, Neil Harris, trucker, Burke's Creek Colliery, sustained severe head injuries when his head was crushed between the top of a truck and a carrying-bar at the bottom of a jig.

On 27th June, 1947, F. Rogers, miner, Alborn's Mine, was buried by a fall of top coal and sustained a dislocation of the spinal column.

On 1st July, 1947, J. Biddington, trucker, Strongman Colliery, was crushed by two full trucks and received a fractured pelvis and right fibula.

On 7th July, Kevin Leech, trucker, Moore and Party's Colliery, was struck by a runaway truck and sustained fractured pelvis and right leg.

On 17th July, 1947, R. Wilkinson, rope-road worker, Denniston Colliery, sustained a simple fracture of the right forearm. He was pushing a full truck when another one came behind and jammed his arm between the two trucks.

On 17th July, 1947, F. J. Oakley, deputy, Liverpool Colliery, was struck by a fall of coal which fell off a face or slip in the roof and sustained a fractured leg, fractured ribs, and injuries to head.

On 30th July, 1947, B. Foster, miner, Liverpool Colliery, was struck by a small fall of coal which fell from the roof and he sustained slight injuries to head and dislocation of left hip.

On 1st August, 1947, H. Lindbom, shiftman, Dobson Colliery, was struck by a large piece of stone from the roof, sustaining slight fracture of the skull and scalp wounds.

On 6th August, 1947, Allan Coe, trucker, Millerton Colliery, slipped and fell on a haulage road, sustaining a fractured right fibula.

On 27th August, 1947, J. P. Magee, miner, and W. Whitfield, shot-firer, Dobson Colliery, sustained compound fracture of leg and fracture of collar-bone respectively. A shot had been fired in the miner's place, and when both men returned to the place a fall occurred, striking both men.

On 13th September, 1947, L. Heaphy, jun., Heaphy's Colliery, sustained a crushed left foot when the door of a railway wagon which he was loading fell on his foot.

On 24th September, 1947, A. Pattinson, miner, Dobson Colliery, slipped on a haulage road whilst walking into work and received a fractured fibula.

On 5th November, 1947, D. Blue, miner, Blackball Colliery, received a fractured left leg when a fall of side coal struck him on the leg.

On 24th November, 1947, F. Heslin, fitter, Strongman Colliery, whilst operating a power hammer in the workshops received a slight fracture of the skull when he was struck by a portion of a bolt.

On 28th November, 1947, T. Jackson, miner, Millerton Colliery, sustained a fractured left knee when a piece of coal weighing approximately 5 cwt. fell from the roof.

On 10th December, 1947, C. Parsonage, shot-firer, Strongman Colliery, was struck by approximately 2 cwt. of coal which fell from two concealed partings in the roof. X-ray examination revealed a minor fracture of the spine.

DANGEROUS OCCURRENCES IN COAL-MINES (Regulation 81, Coal-mines Regulations 1939)

Chandler's Opencast Mine, Murray Creek.—On 19th January, 1947, a fire broke out. Two pumps were installed and water was applied to extinguish the outbreak.

Liverpool Colliery, Rewanui.—On 19th February, 1947, a heating was discovered in No. 2 Bank, Morgan East. The section was later sealed off.

Central Mine, Reefton.—On 14th March, 1947, a fire occurred on fourth level. Stoppings were erected to isolate the area affected and the heating sealed off. On 10th April, 1947, a further heating occurred and was again sealed.

Glencraig Mine, Buller Gorge.—On 5th April, 1947, a fire was discovered along the outcrop in the opencast mine. A pump was installed and water applied to the seat of the fire.

Blackball Colliery, Blackball.—On 6th April, 1947, a heating was discovered in a fall of stone in the old workings to the left of the Sump Dip. Water was laid on and the heating extinguished. The area was later sealed.

Cascade Creek Mine, Cascade Creek, Denniston.—On 14th April, 1947, a fire broke out in the waste in Durkin's South Section. This outbreak was sealed by a series of stoppings after an attempt to sluice the heated material away proved abortive.

Morrisvale Mine, Reefton.—On 20th May, 1947, a heating was discovered in No. 2 Higrade Mine in the waste. The area was sealed by the erection of three stoppings.

Hillcrest Mine, Waitahu.—On 7th July, 1947, a heating was discovered to the rise of the main level. The affected area was sealed off by the erection of two stoppings.

Cascade Creek Mine, Denniston.—On 1st September, 1947, a fire broke out at top of No. 2 stopping which was erected to seal off a previous heating. Water was turned on and the outbreak was under control on 3rd September. An additional stopping was erected in front of No. 2 stopping.

Liverpool Colliery, Rewanui.—On 20th September, 1947, a heating was noted in No. 2 Section, Morgan East. The place was sealed immediately.

Alborn's Mine, Boatmans.—On 24th October, 1947, a heating occurred in the waste. Two stoppings were erected to deal with the outbreak.

Blackball State Colliery, Blackball.—On 25th November, 1947, a heating was discovered in the Crow's Nest Pillar Section. Stoppings were immediately erected after the discovery of the outbreak and the area closed off the same day.

Liverpool State Colliery, Rewanui.—On 4th December, 1947, an accumulation of 5,000 cubic feet of firedamp was discovered in the Morgan West Dip Section. Men were withdrawn from the section and employed in the rearrangement of the ventilation. As a result of this rearrangement, the place was eventually cleared several hours later.

Wallsend State Colliery, Brunnerton.—On 16th December, 1947, an accumulation of 8,000 cubic feet to 10,000 cubic feet of firedamp was discovered in No. 1 Panel. The accumulation was cleared by rearrangement of the ventilation. This accumulation was reduced to 5,000 cubic feet on the morning of the following day, and the accumulation was finally cleared at the end of the day.

Blackball State Colliery, Blackball.—On 26th December, 1947, a small fire was discovered in the Sump Section. Stoppings were immediately constructed and the affected area sealed off.

Prosecutions under the Coal-mines Act, 1925

On 31st January, 1947, a shot-firer was charged with failing to examine with a locked flame safety-lamp immediately before a shot was fired a working-place and all places contiguous thereto within a radius of 20 yards for the presence of inflammable gas. The charge was laid under Regulation 226 (*g*), Coal-mines Regulations 1939. A conviction and fine of £1 and Court costs 15s. 6d. were imposed.

SOUTHERN INSPECTION DISTRICT (G. Smith, Inspector of Coal-mines)

Canterbury District

Acheron Mine No. 1 (Anthracite) (J. Todd (Deputy), Mine-manager).—Development has been continued, with Levels 4, 5, and 6 in a southerly direction, the seam varying from 7 ft. to 9 ft. in thickness; irregularities in the form of small steps are met from time to time, and on an average the height worked is 6ft. to 7 ft. To the north the seam is cutting out with stone bands, igneous intrusions, and streaky, stony coal. Gas (CH_4) in small quantities is reported occasionally.

Acheron No. 2 (Anthracite) (J. W. Marsh (Permit), Mine-manager).—The old mine has been abandoned, the seam 5 ft. rapidly thinning in all directions to 3 ft. or less with stone irregularities. A new tunnel has been driven in a flat area immediately below the old mine site, and a 5 ft. seam is showing at the face, and preparations are under way with the installation of screening-crushing plant from the Brockley Mine, which recently closed.

Brockley Mine (Anthracite) (C. W. Broad (Permit), Mine-manager).—The last pillar was extracted and the mine closed down in January. The seam, 2 ft. 9 in. in thickness, almost vertical (70 to 80 degrees) was clean and worked freely, breasting back with a loose end, and with no shooting required, with almost complete extraction obtained.

Bonanza Mine (D. McQueen (Deputy), Mine-manager).—The old mine, from which the last pillars were extracted closed about September, and a new drive put in on the opposite side of the hill had struck the coal-seam after 40 ft. of driving, the seam being at a moderate grade, but further driving was required to prove the thickness and quality.

Victory Mine (O. McQueen (Permit), Mine-manager).—Development has been with three levels to each side off the main dip, the seam of 14 ft. in thickness at an inclination of 70 degrees becoming stony and unprofitable to work at a distance of 7 chains from the dip to the south-west, where a hard stone band rapidly thickening is met. This line of stone coal is encroaching on the line of dip and will ultimately restrict development in the dip.

Levels to the North-east are now being projected and these appear more promising. Only two men are employed.

Malvern Mine (A. Taylor (Deputy), Mine-manager).—Hard, dirty work with considerable expense has been put in to recover these workings, previously abandoned by another party. The effort is now showing signs of compensation, from a new tunnel to the east of the old dip drive, and in the hanging wall (the inclination of the measures being 70 degrees) the top seam, 4 ft. in thickness, was struck. Driving in this seam continued to a point decided, from which crosscutting has now located the 6 ft. or lower seam, which is being developed.

It is intended later to unwater the lower dip drive, when recovery with future development will be planned. This may be delayed until electric power is available, but adequate reserves have been established for the time being.

Klondyke Colliery (A. Nimmo (Second Class), Mine-manager).—Development has been with three levels to the south off the main dip, where excellent coal under favourable conditions is present.

Pillaring in the corresponding levels to the north is being undertaken. The inclined seam, with chutes for loading, ladderways, and goaf blockages, is operating very satisfactorily. A split in the seam to the north, followed by dirty coal and troubled ground crossing towards the line of dip drive, will limit further dip development on this bearing.

The seam inclination, 78 degrees in the upper levels, is flattening to the dip, being 38 degrees in the lowest level driven.

Lucknow Clay-pit (A. Smith (Permit), Mine-manager).—The clay seam thinned some 4 chains from the portal, and retreating on a single line of pillars is now in operation. The major portion of the output is obtained from an open cut in the clay outcrop across the shallow gully from the portal.

Steventon Colliery (H. Robb (Underviewer), Mine-manager).—The operations are confined to pillaring, with the seam at present 6 ft. in thickness of very hard coal, with well-defined backs producing good results. Provision is being made for the support of a section of upper workings, utilized for stage-pumping drainage.

Mount Somers Mine (A. K. McLean (Underviewer), Mine-manager).—Development continued throughout the year, and pillaring, with very satisfactory results, commenced about two months ago, the seam of good quality in the latter section being 17 ft. in thickness. A fault of small extent has been pierced beyond the fringe of the old Mount Somers Mine workings showing good coal, the area being 10 chains wide, and development on a westerly direction, previously limited, can now be undertaken.

Blackburn Nos. 1 and 2 Mines (R. Beckley (Deputy), Mine-manager).—Operations in the No. 1 Mine are confined to pillaring, retreating on a narrow strip about 5 chains from the portal, and the life of this mine is limited, with possibly the end hastened, towards the closing stages, by surface movement.

In the No. 2 Mine, adjacent and to the rise of the No. 1, development of limited extent has been carried out, with the coal in the lower heading of shaken texture and the thickness of seam 7 ft., although other headings to the rise show better coal of much increased thickness. The area is, practically speaking, a pear-shaped outlier of approximately 4 acres, with the seam outcropping, or with shallow cover on three-quarters of the perimeter, while the moderate dip of the measures is irregular in bearing.

Transport from the No. 1 Mine is by surface self-acting incline of a 1 in $2\frac{1}{2}$ maximum grade for approximately half of the 29 chains of length, the truck operating being of 4-ton capacity.

For transport from the No. 2 a circuitous steep lorry road of approximately four miles in length, commencing at a point adjacent to the Mount Somers Mine, furnishes good access direct from the mine. This road has been well constructed and has a good surface, but beyond furnishing a more reliable access during snow periods than that by way of the self-acting incline its formation from a financial aspect is questionable, unless further coal-bearing areas are available.

Newburn Mine (Mount Somers) (T. Graham (Deputy), Mine-manager).—Very limited development has been done on this area, where prospecting at two points has failed to find workable coal.

At the main point a drive 300 ft., crosscutting the measures, which are inclining at approximately 45 degrees, cut various thin seams, including two of 4 ft. in thickness, and in the first of these about 2 chains from the portal a level or two to the north were driven for approximately 4 chains. An examination of these workings, the coal, and the timber necessary gives adequate data to class the seam as unworkable, and the fact that no work had been done since December adds further proof.

In the Chapman's Creek, over the spur, a jig of a fair length has been laid and a prospecting-tunnel driven in a 4 ft. seam of shaken coal, while from an area adjacent and above the portal approximately 300 tons of hard fireclay has been mined.

A number of old prospecting-tunnels showing shaken coal and a decided variation in direction of dip of the measures exist, and the concern as a coal-mine is a failure.

Woodbank Mine (Albury) (J. H. Smillie (Deputy), Mine-manager).—Development to the left with a level now projected, approximately 6 chains, is the work in hand, the seam being 9 ft. of hard coal with firm sandstone-mudstone roof. The face of the level is now abreast of the air-shaft, and it is hoped, following a further 3 chains of driving, to connect with the surface at a suitable gully for an improved second outlet. The pillar above this level, owing to failure to drive level, has thinned, but development beyond will be in maiden country, and with the additional timber requested to be erected it should be possible to form the new egress. The dip requires extending, and development with new levels to each side can then be undertaken and some system established.

North Otago District

Willett's Mine (M. W. Wilson (Permit), Mine-manager).—Three men are employed splitting and extracting the seam, being 7 ft. in thickness of two distinct layers, the upper 3 ft. of darker colour being the better quality, but the whole is good coal. The roof is sandstone-mudstone with gravel above, and a tight goaf closely follows the extraction.

Although the grade is an easy one, previous development has made little provision for haulage, with the result that a circuitous route of irregular grades now furnishes access.

Airedale Mine (R. A. Adcock (Deputy), Mine-manager).—Pillar work, splitting and lifting, is the work now being undertaken on a narrow width, retreating from the dip where some 3 chains beyond the seam split with stone band thickening. The seam, 8 ft. in thickness with mudstone roof, is of good quality, and although places are driven very narrow, floor heave gives trouble in the roadways. From the new return inclined drift, adequate supplies of good-quality sand has been stowed underground for future stopping requirements.

St. Andrews Mine (J. H. Nimmo (Deputy), Mine-manager).—Pillaring is the work in hand, the places being very narrow, and good results are being had. Old workings to the west and north of the present area (3 chains by 4 chains) which is being pillared have been well sealed. The seam and roof are similar to Airedale, but conditions generally are damp, whereas those at the adjoining mine are very dry.

Ngapara Mine (C. J. Nimmo (Permit), Mine-manager).—After a life of upwards of seventy years, the extraction of the first pillars commenced about three months ago, retreating from the north-east corner on northern boundary. The system, splitting narrow, with loose-end lifts and dropping tops simultaneously, is giving good results. The seam, 24 ft. in thickness, of good quality, is overlain by a 20 ft. bed of pipeclay with glaucanite sands above, and the latter, when water-bearing, spill out into the workings following pillar falls.

Barricades adjacent to the pillar faces are erected, with a further one fitted at the termination of each shift in the roadway as a precautionary measure. The demand for slack has enabled all the old workings to be cleaned out, and these are in good condition.

By sinking through the under-measures some 20 ft. to the underlying gravels, timbering this shaft, and syphoning clean water from the sump, a unique system of drainage is provided.

Rockvale Mine (Herbert) (D. R. Gaudion (Deputy), Mine-manager).—An area to the west of Marshall's area, which is sealed, is being developed, the seam being 7 ft. in thickness of good coal with a coal-stone roof which stands well. Places 8 ft. to 9 ft. wide are in good order, and the measures are almost level, the access being a narrow, arched adit of a short distance.

Shag Point Mine (W. McLaren (Deputy), Mine-manager).—Pillar work of limited extent has been undertaken, but towards the end of the year negotiations for a change of ownership took place and the mine has been idle for a short period, but operations have now resumed and greater activity is expected in the near future.

Central Otago District

Coal Creek, Otarhua, Cambrian, Idaburn, and Belmont Pits.—Opencast operations to meet local requirements have been continued on similar lines to those of previous years at the above pits.

Corcoran's Mine (Roxburgh).—Very little work has been done on this lease, which was recently granted—a drive of a few yards opening up a full face of coal with neither roof or floor showing. On my visit no work was being done, but a pump had been operating on an opencast pit adjacent which appeared to have been worked many years ago.

The lessees would be better to make a few trenches and prospecting pits farther up the gully, when no doubt a good face, water-free, and which can be operated by opencast methods for a time, will be proved.

The new hydro power scheme should create greater activity, and in all probability the owners are awaiting this trade.

Shepherd's Creek Mine (J. Hodson (Second Class), Mine-manager.)—Pillaring-work has been carried out with satisfactory results, and as the last row of pillars is being extracted the life of the mine is limited, but I was informed that a new area a short distance away is to be developed.

Cairnmuir Mine (W. Hodson (Deputy), Mine-manager).—The failure of the owners resulted in this mine being idle for a period, but a working party of three recently resumed operations. Driving of the lower level is being proceeded with, and it is intended to project the dip a further 100 ft. to form a sump, and open up another two levels.

The seam of good coal is, at the dip face, almost vertical, and I have been advised that a run of sand has, for the time being, caused a halt in the proposed dip extension, but meanwhile the bottom level can be developed and a pillar or two at the end of upper level extracted to place the men.

Otago and South Otago Districts

Barclay's Mine (Fairfield) (F. Barclay (Second Class), Mine-manager).—The seam in the Crown lease split, with the upper 6 ft. section thinning to 3 ft. 6 in. at half a chain from the western boundary. The party is now concentrating on an area of old Walton Park workings, where the places are standing in good condition beyond Christie's Mine, which ceased in 1924. The thickness of seam of good coal is 12 ft. to 16 ft. with a good coal-stone parting, but the old places are wide with narrow, long pillars.

An electric pump of small capacity has been installed and the water lowered, but on account of floor heave and closed places on the line of intended development some difficulty has been experienced but better results are now being had. Should further trouble be met, a crosscut off the main dip to tap the old level below will be driven.

Negotiations for a further area adjacent to be worked simultaneously with the present section are in trend. The Crown lease pillars are not to be extracted, as this would spoil future access to the area beyond.

Victory Mine (Brighton) (L. Tikey (Deputy), Mine-manager).—Development has been continued, the seam of good coal being 5 ft. to 6 ft., but irregularities with thinnings, particularly to the north-east, are experienced. Places are driven 6 ft. wide and stand well. Conditions generally are damp and, combined with the low seam, uncomfortable, but to the left the seam is 6 ft. with an easy grade and conditions much better.

Prospecting to the north-east after passing troubled measures showed an improvement, but later struck Mr. Coll's old workings, the drive being fallen and tight through floor heave.

Fernhill Mine (M. Hewitson (Deputy), Mine-manager).—Pillar work in the No. 4 Mine is being continued with excellent results from the 6 ft. seam, the goaf packing tightly with sand immediately behind the retreating line of faces. Places have been kept narrow, and with splits, also 6 ft. in width a high percentage extraction is obtained.

The No. 3 Mine, an adjacent area of very limited extent of solid workings, has been idle, but recently preparations to extend the dip were being made and probably to work other faces.

Willowbank Mine (A. Edmond (Deputy), Mine-manager).—Faulting, cutting diagonally across, has occurred, with the seam also splitting, and work is now confined to pillar-extraction on a narrow width at present. Good results are being obtained, and as the faces retreat an improvement should

be had, with more uniform grades and measures. This company is carrying out prospecting-work on two other areas, one at Saddle Hill (Dunnery's area) and a second between Wingatui and Fernhill Mine. At the latter site results look promising, but further development is necessary before a firm opinion could be given.

Akatore Mine (Milton) (A. J. Clark (Deputy), Mine-manager).—This mine changed ownership during the year, resulting in an increased output, while a screening plant has been installed and improved haulage roadways are being arranged. Development, combined with pillar work, has continued, with satisfactory results, and it is intended to open up a small area suitable for opencast working to meet the extra winter trade.

Lovell's Flat Mine (T. Harris (Deputy), Mine-manager).—Operations at this opencast pit during the year have been on a very limited scale, but an area has been stripped in readiness.

Viewbank Pit (J. H. Lowery (Deputy), Mine-manager).—The plant and general layout has been improved and a good opencast face arranged, and operations are on an increased scale.

Benhar Mine (J. Findlater (Underviewer), Mine-manager).—Partial pillar-extraction in the upper seam and development in the lower seam has been carried out, but a heating early in October resulted in the sealing of the upper seam area, since when development in the lower seam and the advancement of the main dip has been concentrated on, with very satisfactory results. The sealing of the fire area has been well arranged and the general conditions at this mine are excellent.

Taradale Mine (Nicholl's) (C. D. Nicol (Permit), Mine-manager).—A party of 4 men has unwatered an area (McKenzie's) of the old Taratu Mine, and later installed a small Diesel-electric plant for pumping and haulage. The old drives in the section are in splendid condition and the coal is of good quality, and with the plant now operating an improved output should be had.

Kaituna Mine (New) (C. H. Stephen (Permit), Mine-manager).—The work on this new area, (adjacent to the old Kaituna Mine) has been lately confined to extension of the road and erection of screening plant, as a short tunnel has opened up a good face of coal in readiness for production, which should soon commence.

Wangaloa and Sunnydale Mines (R. McVie (Deputy), Mine-manager).—These two mines are adjacent on the same area and worked by the same owners.

In the former, pillar work continued throughout the year, but a heating in October caused the sealing of a small section, leaving only two further pillars to extract, and the mine closed just prior to the Christmas holidays. Later a small section of workings adjacent to the portal has been opened up, and prospects so far appear good.

Pillaring on a small scale has been undertaken in Sunnydale Mine, with good extraction results and excellent coal, and a tightly packed goaf following the retreating face. Since the closing of the Wangaloa Mine, where the coal was also of excellent quality, these men have transferred to the Sunnydale Mine, and an increased output resulted.

Wangaloa State Mine (Opencast) (G. Auld (Quarry Certificate), Mine-manager).—Operations on a larger scale have been carried out on this area, and a high face of good coal, with good reserves, resulting from the effort. The coal, particularly the lower 20 ft. is of excellent quality, and with the plant installed the present daily output of 200 tons should be increased if necessary

Cross's Pit.—Operations at this opencast pit have been irregular and on a small scale and the present programme is unsatisfactory.

Kaitangata Mine (W. E. Hill (First Class), Mine-manager).—The output, with the exception of a minor amount from an 8 ft. seam off the north end of the main haulage tunnel recently developed, has been from pillar-extraction on a rapidly reducing area outside Haig's Dip, and in Rodger's Heading, on which a double shift has been employed. Floor heave is severe in most places, and roadways adjacent to the pillar faces troublesome to maintain, but from the pillar work good results are obtained.

No. 1 Bore was stopped at 800 ft. after proving 15 ft., 7 ft., and 12 ft. seams, in addition to other small seams.

No. 2 Bore, where drilling is still being carried out, about 50 chains south-west of No. 1 Bore, has cut seams of 10 ft., 17 ft., and 12 ft. of good coal, in addition to smaller seams, this proving the continuity of the coal-seams well beyond the old workings of No. 1 Mine. No decision has yet been made regarding development of this area, but the reopening of the No. 1 tunnel is being considered.

Summerhill Mine (Kaitangata Coal Co.) (W. E. Hill (First Class), Mine-manager).—Development has continued with satisfactory results and a good area opened out. This coal is not the bright Kaitangata Coal, but is quite a good quality of its class, while roof boring at various points has proved the seam to exceed 40 ft. in thickness, and surface boring proves it to exist over a large area.

Southland District

Terrace Road, Waimumu, Coster's, Newvale, Ruby, Starlight, Hedgehope, Midway, Argyle, Ota Creek, Diamond Lignite, and Tuanga Pits.—Opencast operations were continued with varying degrees of activity, based on trade demands and plant installed at these mines, the majority being small concerns operated by one or two men, although the first two are operating with machines on a much larger scale.

The average opencast face is 10 ft. to 20 ft. of brown lignite, although deposits of much greater thickness have been proved in the Waimumu district, but these are worked by lifts or benches.

Boghead Mine, Mataura (E. W. Moseby (Underviewer), Mine-manager).—Development continued throughout the year, three levels being driven, the seam recently proved by boring adjacent to the boundary on line of dip being 20 ft. Places are driven wide and 10 ft. in height to a good stone parting, and general conditions are very satisfactory.

Terrace Mine, Balfour (W. McJ. Dixon (Permit), Mine-manager).—Development has continued on a small scale to meet local requirements, mostly winter trade. The thickness of seam is 18 ft. of hard coal, and places are worked 9 ft. in height to a good roof parting. As the name implies, the seam is overlain by a terrace of alluvial gravels, and at times clay-gravel filled wide backs, mainly in the upper part of the seam, are encountered, and the conditions are damp throughout.

Glenlee Mine, Waikaia (E. McGregor (Permit), Mine-manager).—Development on a small scale continued throughout the year, but workings to the west and south are meeting thinning of the seam and soft coal, and it is intended to open out to the north-east. Places are 14 ft. wide by 8 ft. high, to a coal-stone roof, which layer is 5 ft. in thickness with 3 ft. of coal above, while a similar measure forms the floor, and the coal is of good quality. The roadways, for such a small output, are extensive, and concentration on a wider area nearer the portal would be a better policy.

Waimeamea Mine, Orepuki (M. Fowler (Second Class), Mine-manager).—Development continued, but inferior coal was met in the dip and in the level, and extraction of the area of pillars commenced, the section being a small, isolated one.

Pillaring operations were mainly retreating from the dip with a pillar on each side, the places being 7 ft. in height with a similar thickness of top coal worked simultaneously with the pillars, the coal being of good quality.

The life of the mine was estimated at a further four months, but heating lately experienced decided the closing sooner than anticipated. The company is now concentrating on another area over which a prospecting licence was formerly held, and until the lease is completed an application has been lodged to work this area. The new area is adjacent to or part of the old Orepuki Mine, about 20 chains from the mine recently closed.

Hardmac, Liberty, Brazier's, Ohai Coal Co., and Black Diamond Pits.—Opencast operations have been continued at these pits, the first three being in a small way, with those at the other two more extensive, particularly at the latter, where extensive stripping operations have been undertaken for some time with additional modern machinery recently added to the plant.

Mossbank Mine (A. E. McMillan (First Class), Mine-manager).—Pillar-extraction, solely in the lower part (south-west) of the mine, comprised the year's operations. Extraction is from the dip, with water filling the goaf and following the retreating pillar face. During the year two heatings were experienced in the lower coal dip area, and these were effectively sealed.

A new haulage road and intake airway is being driven to the surface at a grade of 1 in 3½, and approximately two-thirds of the required distance of 700 ft. has been completed. This new road is to replace the present roadway and permit pillars under it to be extracted.

Star Mine (J. Lewis (First Class), Mine-manager).—Development in this mine has finished against faults to the dip and on the east and west sides of the mine. The output is being had from pillar-extraction in the Nos. 1, 2, and 3 East Levels, also from the south-east corner of the mine—Birchwood area. Good results are being had with this pillar-extraction. A slope dip is being driven in stone from a point on the main dip to No. 3 Level to shorten and improve the haulage.

Birchwood Mine (G. E. Lewis (First Class), Mine-manager).—Development is being undertaken at all points where conditions warrant this course. No. 3 Dip is being driven north-west in the upper part of the seam, which has split, the intervening band of sandstone varying from 4 in. to 5 ft. The coal is of good quality and dips at 1 in 6 towards the western boundary of the lease, with 7 ft. in the top split and 6 ft. in the bottom. No. 4 Dip is advancing in a south-westerly direction, also in the upper part of the split beam, at a grade of 1 in 8. A pair of levels is developing to the east in a seam of good coal 23 ft. in thickness towards the old Ohai Syndicate's workings. Pillar-extraction in the main dip and No. 1 West Dip sections has been completed.

Wairaki Nos. 1 and 3 Mines (F. E. Lockington (First Class), Mine-manager).—In the form, pillar-extraction has been the only work undertaken, and this has now retreated to No. 1 East Level. The line of extraction on the east side has been changed to be parallel with the barrier, on which line a retreat of approximately 3 chains has been made. The work has been carried out efficiently and very satisfactory results are being had.

No. 3 Mine: Development has continued throughout the year. In the No. 9 Section, development was in an easterly direction from the bottom of the subsidiary dip, but owing to an altered dip in this direction the levels had to be stopped as they were approaching the roof after being advanced 3½ chains. Extension in an easterly direction in the No. 8 and No. 10 Sections has been made, each of which has been projected approximately 7 chains from the main road.

Linton Nos. 1 and 3 Mines (A. Colligan (First Class), Mine-manager).—In the No. 1 Mine pillaring has been carried out in sections 6, 7, and 8, and the former, where extraction on the gallery system was recently completed, has been sealed and this area is now filling with water.

A pair of rise headings has been driven in a southerly direction from the No. 10 Level in good coal 40 ft. in thickness for a distance of 12 chains when a fault was struck, and a panel is being formed. From the bottom of the main crosscut haulage a pair of headings has been driven approximately 12 chains in a south-westerly direction to develop the area to the west.

A prospecting drive, driven 80 ft. in the fault at the bottom of No. 1 Main Dip, has been abandoned meantime.

Some stripping has been carried out and the coal won from the mouth of the old Horse Level, where a small fire occurred, but a further area will have to be removed to safeguard the No. 1 Portal.

No. 3 Mine: Pillar work was completed in No. 3 Dip and the areas allowed to fill with water, while in the No. 5 Dip area pillaring is being continued. Development with the No. 6 Dip continued, and this heading has now been projected 6 chains in the Black Lion area. A fault was encountered on the north side of this dip, the trouble being a continuation of the fault struck in No. 5 Dip.

General: On Sunday, 9th February, 1947, a serious fire destroyed the winch-house, tippler-shed, weighbridge, and portion of the staging and screens. These have been replaced.

Fatal Accidents

Three fatal accidents occurred during the year:—

On 17th October Andrew Rolland, sixty-two years of age, examining deputy in the Linton No. 1 Mine, was asphyxiated with black-damp. A pillar fall had occurred the previous evening in an adjoining area, causing a short-circuit, on account of the floor falling out of the return air-course in an upper seam, and possibly movement along the line of stoppings and within the sealed area in the upper seam, caused a leakage of black-damp. Deceased climbed the ladders in the rise (40 ft.) and intended inspecting the three stoppings within 2 chains of the rise; he must have become aware of the danger and endeavoured to return, but collapsed within a few yards of the top of the rise. Failing deceased's return at the usual hour, an inspection failed to find him, and as the upper 14 ft. of the rise was foul the Rescue Brigade was called and recovered the body.

On 11th December, towards the end of the shift, Andrew Cunningham Dixon, miner, thirty-seven years of age, married, was struck on the shoulder and side by a piece of coal dislodged from the lip, or which slid down a small rise leading to the gallery upper working. Deceased and mate were working in a pillar on the gallery system with two other pairs of miners in the No. 6 Section, Linton No. 1 Mine. Deceased received multiple injuries on the right side, including fractures of the jaw, clavicle, scapula, humerus, and five ribs, the latter causing damage to the lungs. He succumbed to his injuries and complications in Kew Hospital on 20th December.

On 9th January at 11.30 a.m., James Stephen Neylon, a widower, sixty-two years of age, employed as a driller in the Star Mine area, was electrocuted owing to the derrick of the drilling plant coming in contact with the high-tension, 11,000-volt power-lines, death being instantaneous. Deceased and mate were engaged shifting the plant to a new position. As the plant was being towed by a truck driven by the assistant, with deceased steering the drilling plant, it is indeed fortunate that a double fatality did not occur, for the derrick in fouling had tripped the breaker unbeknown to the two men. Each had dismounted from their respective machines during the thirty-second period when the breaker was out, but on the current coming on again deceased, with his hand on the drill-winch, received the fatal shock.

Serious Non-fatal Accidents

Star Mine, Ohai.—On 5th March, 1947, K. Lambert, a trucker, received an injury to his right foot owing to the tail-chain of the horse he was driving becoming entangled with his legs. An x-ray examination later revealed a fracture of one of the small ankle bones.

Linton Mine, Ohai.—On 6th March, 1947, A. C. Cunningham, while taking the rope off the rake, slipped, staggered across the road, and was caught between a full box and a prop, sustaining an injury to his hip (slight dent in the hip bone). The accident occurred at the top of the No. 6 Dip, No. 3 Mine.

Kaitangata Mine, Kaitangata.—On 7th March, 1947, E. Bruce, a trucker, aged eighteen years, slipped on a flat sheet and injured his arm, a later examination revealing an impacted fracture of the arm.

Wangaloa Opencast, Kaitangata.—On 24th July, 1947, the following injuries were suffered when a transport lorry, backing slowly, got out of control and turned over on its side on the road. The men were being conveyed from Wangaloa Opencast Pit to Kaitangata at approximately 5 p.m., and of the eleven workers, six were injured: E. E. Griffen, head injuries (admitted to Balclutha Hospital); L. M. Gray, severe bruises left side of ribs and right hip; A. Boyd, bruises right elbow, chest, finger, and knee; W. Crowe, minor head injuries and shock; P. G. McGregor, injuries right hand and forearm; A. G. Reid, bruises knee and elbow, and cuts lip and thumbs.

Klondyke Mine, Sheffield.—On 20th August, 1947, P. McKever, a miner, received a slight fracture of the skull. The accident was caused by McKever's mate slipping while passing a lath in the highly inclined seam, the lath knocking McKever off his balance, and in falling he struck his head on a prop some 6 ft. below.

Kaitangata Mine, Kaitangata.—On 2nd October, 1947, T. Clement, a trucker, sustained a fractured pelvis. When travelling the haulage roadway he was struck by a race of full tubs as he attempted to get into a manhole. Clement was found at the side of the roadway alongside the manhole, and an x-ray examination revealed the fracture. The injured man was knocking off early and travelling the haulage road, contrary to instructions or regulations.

Star Mine, Ohai.—On 15th October E. Ballock tripped over a rail near the face, and a subsequent x-ray examination revealed a fracture of the fibula.

Dangerous Occurrences

Linton Mine.—On 31st January, 1947, at 4.30 p.m., the deputy reported smoke coming from a stopping in No. 2 Rise Panel, No. 8 Section, No. 1 Mine. Three temporary stoppings, part erected, were completed, and the permanent stoppings later erected.

Linton Mine.—On 28th February, 1947, a slight smell from the gob was reported at the lower pillar, No. 7 Section, No. 1 Mine. The men were withdrawn while the sealing operations were under way, and permanent stoppings were later erected.

Newburn Mine, Mount Somers.—On 15th April, 1947, signs of heating were discovered in a dead end of a level; a temporary wooden stopping was erected, and this was followed by a sand-bag stopping.

Linton Mine.—On 19th April, 1947, the manager reported that the fire from the old Horse Level had crept around the outcrop coal towards the portal of the Horse Level Mine. Preparations were made and the coal removed by opencast methods to cut off encroachment.

Linton Mine.—On 22nd April, 1947, owing to a large accumulation of CH_4 (2,000 cubic feet) being discovered in the goaf in the pillars at the bottom of No. 8 Section, No. 1 Mine, which it was impossible to clear, this goaf was sealed off.

Mossbank Mine.—On 14th May, 1947, the district manager reported an outbreak of fire which occurred at a permanent stopping situated between the coal-dip haulage road and the upthrow fault to the north of the mine. The fire had originated in an old roadway, recently sealed on account of suspected heating, and following a fracture in the coal had come round the stopping. The Rescue Brigade was commissioned, and the mine was idle for two days while temporary and then permanent stoppings were erected near the site and in four roads suspected of communicating with the affected roadway. The district manager in his final report recorded his appreciation of the services rendered by the Officer in Charge, Rescue Station, and his willing team. No further trouble has been experienced since the fire was sealed.

Birchwood Mine.—On 27th May, 1947, the manager reported that owing to a smell of gob-stink coming through an opening left in the return-side stopping in lower No. 1 Dip pillared area the area was completely sealed by two permanent stoppings. Rescue Brigade men were standing by in case of emergency while the sealing was in progress.

Birchwood Mine.—On 9th June, 1947, CH_4 was discovered leaking at a stopping recently erected to seal off the main dip completed section. The accumulation was cleared, the leak sealed, and permanent stoppings erected.

Fernhill Mine.—On 29th September, 1947, the manager reported evidence of heating discovered in an area of No. 4 Mine. Two stoppings were erected to seal the area, and no further trouble has been experienced.

Wangaloa Mine.—On 10th October, 1947, on account of fire threatening, it was decided to shift the pump and seal the dip below the main return, as in all probability the fire is drawing air from the surface. Following the extraction of the remaining two dip pillars the mine finished in December.

Wairaki Mine.—On 13th November, 1947, the district manager reported indications of heating in the dip goaf area No. 1 Mine, discovered by the examining deputy. As all preparations had been made for such an emergency, the mine was idle and the stoppings were quickly completed to effectively seal the area. The Officer in Charge of the Rescue-station and men were in attendance, and an inspection of the mine, together with the taking of tests for CO, were made, a slight trace of monoxide being observed in the return airway. Although no CH_4 had been reported for a considerable time, as a precautionary measure the mine was idle for forty-eight hours following the completion of the sealing, and coal-production did not commence until the following Monday, the 17th.

Linton Mine.—On 29th November, 1947, a heating was discovered in the opencast coal near the mouth of No. 1 Mine (a repetition of what occurred on 19th January). Water was applied, and a cut is being put in the coal to isolate the small block of opencast coal.

Prosecution

A trucker, Andrew Morrison Carson, employed in the Kaitangata Mine, was prosecuted on 26th February, 1947, for a breach of section 98 of the Coal-mines Act, 1925. Carson, a youth of eighteen years, had in his possession on 22nd October, 1946, a match; the circumstances surrounding the incident pointed to it being purely accidental, and a small penalty was sought, Carson being fined £1 and 10s. costs.

Ohai Rescue Brigade

The Officer in Charge and his men have rendered valuable services on several occasions during the year, details of which were—

Mossbank Mine: 14th May, sealing off fire.

Birchwood Mine: 26th May, sealing a heating; 19th May, examination of suspected leakage of CO from stoppings; 5th September, examination of old fire area with view to reopening; and 7th September, resealing the area when heating was present.

Linton Mine: 17th October, recovery of body of deputy from fouled area, taking samples as requested, and assisting Inspector of Mines.

Wairaki Mine: 13th November, sealing off fire.

Old Nightcaps Co. Workings: 13th December, exploring on area of these old workings, at request of Inspector, where opencast operations had opened a section filled with foul gasses.

The Officer in Charge has also assisted with the examination for Gas-testing Certificates and re-examination at five-year period, and in the preparation and maintenance of equipment.

Ten new men were trained during the year, and the Station register is now 38 trained men.

STATISTICS OF WORKINGS IN COAL-MINES, 1947

Name of Mine and Locality.	Title held (Crown Lease or otherwise).	Number of Years worked.	Classification of Coal.	Number of Seams worked.	Thickness of Coal-seams.	Thickness worked.	System of Working.	Total Output for 1947.	Total Output to 31st December, 1946.	Total Output to 31st December, 1947.	Number of Persons ordinarily employed.		
											Above.	Below.	Total.
NORTHERN INSPECTION DISTRICT													
								Tons.	Tons.	Tons.			
Waikato District													
Rotowaro, Rotowaro	Freehold	30	Brown	2	7′ to 27′	Full	Bord and pillar	73,942	3,718,693	3,792,635	58	127	185
Alison, Rotowaro	,,	8	,,	1	6′ to 22′	,,	Ditto	80,120	468,128	548,248	56	113	169
Alison Opencast, Rotowaro	,,	¼	,,	..	..	..	Opencast	5,363	..	5,363	8	..	8
Pukemiro, Pukemiro	,,	32	,,	1	4′ to 18′	4′ to 18′	Bord and pillar	117,010	3,710,300	3,827,310	50	249	299
Wilton, Glen Massey (State)	,,	17	,,	1	6′ to 8′	7′ 6″	Ditto	75,853	1,329,622	1,405,475	55	154	209
Waikato Extended, Huntly West	,,	3	,,	..	9′	9′	Opencast	14,231	153,894	168,125	10	..	10
Glen Afton No. 1, Glen Afton	Crown lease and freehold	27	,,	1	4′ to 16′	9′	Bord and pillar	46,344	2,323,247	2,369,591	32	93	125
MacDonald, Waikokowai	Ditto	17	,,	1	6′ to 20′	9′ to 14′	Ditto	128,273	2,229,183	2,357,456	87	227	314
Whatawhata Campbell, Whatawhata	Crown lease	26	,,	1	10′ 6″	10′	,,	9,156	129,095	138,251	5	8	13
Renown, Renown	Freehold	20	,,	2	15′	7′ 6″ to 9′	,,	82,635	2,036,606	2,119,241	62	162	224
Glen "A" Potteries, Glen Afton	,,	11¼	,,	1	10′	10′	Opencast	200	3,136	3,336	1	..	1
Rangitoto, Otorohanga (opencast)	Native lease	3½	,,	1	5′ 6″	5′ 6″	,,	2,869	18,641	21,510	3	..	3
Victory, Rotowaro	Leased from Taupiri Co.	1	Sub-bituminous	1	14′	8′	Bord and pillar	4,381	..	4,381	1	5	6
Kimihia (State), (opencast)	Crown lease and University endowment	3¾	Brown	1	..	..	Opencast	68,342	104,828	173,170	28	..	28
Kemp's (State), (opencast)	Freehold	3½	,,	2	4′ to 6′	Full	,,	56,391	86,521	142,912	48	..	48
Glen Afton (State), (opencast)	,,	3½	,,	1	..	..	,,	14,201	39,889	54,090	10	..	10
Taranaki District													
Old Stockman, Mokau	Freehold	27	Brown	1	4′ 6″	All	Bord and pillar	652	17,097	17,749	..	2	2
Mangapehi, Mangapehi (State)	Crown lease	13½	,,	1	8′ to 20′	..	Ditto	52,472	361,588	414,060	29	103	132
Tatu, Ohura (State)	,,	10	,,	1	7′	Full	,,	31,582	227,235	258,817	37	56	93
Aria, Aria	,,	4	,,	1	12′	7′ to 9′	,,	3,580	6,763	10,343	2	3	5
Waitewhena (State), (opencast)	Freehold	3½	,,	1	11′	11′	Opencast	40,210	55,079	95,289	7	..	7
Mangakara Hydro Coal Syndicate, Ohura	Crown lease	1	,,	1	5′	5′	,,	5,971	358	6,329	2	..	2
Tonga, Ohura (opencast)	,,	2½	,,	1	3′ 6″	3′ 6″	,,	316	..	316	2	..	2
Paparata, Ohura (opencast)	,,	1¼	,,	1	3′ 9″	3′ 9″	,,	1,558	297	1,855	2	..	2
Hikurangi District													
Waro, Hikurangi	Freehold	13	Sub-bituminous	1	4′ to 6′ 6″	All	Bord and pillar	17,220	218,931	236,151	15	50	65
New Kamo, Kamo	,,	13½	,,	1	8′ to 16′	8′ to 9′	Ditto	46,522	540,078	586,600	22	96	118
Wharcora, Wharcora	,,	2½	,,	1	4′	4′	Opencast	40	165	205	2	..	2
Opencast, Hikurangi	Crown lease	½	Brown	1	5′	5′	,,	206	..	206	2	..	2
Kiripaka, Kiripaka	Freehold	½	Sub-bituminous	1	5′ 6″	7′ to 4′	,,	380	..	380	2	..	2
Output of collieries now abandoned or suspended								..	12,666,189	12,666,189	..	..	..

Nelson District														
Westhaven, Collingwood ..	Freehold ..	9	Sub-bituminous	1	6′ ..	Full ..	Bord and pillar	3,466	25,447	28,913	2	6	8
Owen, Owen River	Crown lease ..	18	Ditto ..	1	1½′ to 2′ ..	,, ..	Ditto ..	1,782	53,690	55,472	1	7	8
Strathmore, Ariki, Murchison ..	,, ..	6½	,, ..	1	3′ 9″ to 5′	,, ..	,, ..	89	815	904	..	1	1
Six-mile, Murchison	,, ..	6½	,, ..	1	8′ ..	,,	,, ..	1,995	5,742	7,737	1	3	4
Whareriki, Puponga	Coal-prospectors licence	½	,, ..	1	5′ 3″ ..	,, ..	,, ..	55	..	55	..	2	2
Buller District														
Allan's (Nile-Hydro), Charleston ..	Crown lease ..	15	Lignite ..	1	20′ to 30′	Full ..	Opencast	128	108	236	5	..	5
Bowater and Bryan's, Charleston ..	,, ..	17½	,, ..	1	4′ to 36′ ..	,, ..	,,	42,140	106,069	148,209	16	..	16
Brighton, Fox River ..	,, ..	15	,, ..	1	12′ to 16′	9′ ..	Bord and pillar	2,379	8,981	11,360	1	2	3
Cascade, Cascade Creek ..	,, ..	21	Bituminous	1	20′ to 30′	8′ ..	Ditto ..	22,592	334,950	357,542	7	11	18
Charming Creek, Ngakawau ..	,, ..	20	,,	1	20′ ..	10′ ..	,, ..	32,774	441,060	473,834	22	35	57
Coal Creek, Seddonville ..	,, ..	30	,,	1	22′ ..	8′ ..	,, ..	3,339	129,377	132,716	1	6	7
Hydro, Seddonville	,, ..	12	,,	1	20′ ..	Full ..	,, ..	10,479	120,007	130,486	4	6	10
Paine's, Buller Gorge	,, ..	45	Brown ..	1	14′ to 18′	,,	Opencast Bord and pillar	7,037 596	42,536	50,169	8	..	8
Glencrag, Buller Gorge	,, ..	24	,, ..	1	12′ ..	,, ..	Ditto ..	10,571	31,142	41,713	1	9	10
Glencrag Opencast, Buller Gorge	,, ..	½	,, ..	1	10′ to 18′	,, ..	Opencast	4,774	..	4,774	7	..	7
Denniston, Denniston	,, ..	67	Bituminous	1	3′ to 20′ ..	,, ..	Bord and pillar	78,474	12,220,686	12,299,160	74	194	268
Millerton, Granity	,, ..	56	,,	1	4′ to 40′ ..	12′ ..	Ditto ..	53,756	9,289,803	9,343,559	41	69	110
Stockton, Ngakawau	,, ..	39	,,	1	4′ to 25′ ..	10 to 25′	Opencast Bord and pillar	154,803 103,607	4,974,714	5,233,124	194	143	337
Cardiff, Mokihinui	,, ..	11½	,,	1	10′ ..	Full ..	Ditto ..	1,721	34,742	36,463	1	3	4
Buller Gorge, Rahui	,, ..	5½	Brown ..	1	12′ ..	8′ ..	,, ..	2,583	14,552	17,135	1	2	3
Heaphy's, Buller Gorge ..	,, ..	1½	,, ..	1	25′ ..	8′	Opencast Bord and pillar	900 1,316	210	2,426	2	3	5
Moynihan's (Nile-Hydro), Charleston	,, ..	2	Lignite ..	1	20′ to 30′	20′ ..	Opencast	12,944	1,500	14,444	5	..	5
Hillside (Gemmell and Bennett), Charleston	,, ..	2	,, ..	1	9′ ..	Full ..	,,	890	1,217	2,107	3	..	3
Rata, Charleston	,, ..	½	,, ..	1	36′ ..	,, ..	,,	1,013	..	1,013	5	..	5
Sinclair's (Nile-Hydro), Charleston	,, ..	½	,, ..	1	26′ to 30′	15′ ..	,,	335	..	335	5	..	5
Reefton District														
Alborn's, Boatmans	Crown lease and freehold	52	Brown ..	3	8′ to 12′ ..	8′ ..	Bord and pillar	9,667	156,970	166,637	1	11	12
Kleen, Boatmans	Crown lease ..	4	,, ..	1	15′ to 20′	Full	Ditto ..	826	3,305	4,188	2	..	2
Burke's Creek, Reefton ..	,, ..	46	,, ..	1	8′ to 15′ ..	9′ ..	Opencast Bord and pillar	57 17,872	497,397	515,269	16	36	52
Morrisvale, Reefton	,,	35	,, ..	3	6′ to 25′	Full	Ditto ..	4,594	254,289	260,164	2	6	8
							Opencast	1,281			4	..	4
Clele, Merrijigs	,,	61	,, ..	1	5′ ..	,, ..	Bord and pillar	284	113,462	113,746	..	1	1
Coghlan's, Capleston	Freehold ..	50	,, ..	1	8′ to 12′ ..	,, ..	Ditto ..	1,739	64,607	68,090	1	3	4
New Imperial (Coghlan's), Capleston	Crown lease ..	½	,, ..	1	18′ ..	10′ ..	,, ..	1,744			1	3	4
Defiance, Murray Creek ..	,, ..	19	,, ..	1	6′ ..	Full ..	,, ..	504	64,792	65,296	1	5	6
Burnwell, Reefton	,, ..	19	,, ..	1	40′ ..	9′ ..	,, ..	9,110	44,301	53,411	1	15	16
Central, Reefton	,, ..	3½	,, ..	1	10′ to 16′	9′ ..	,, ..	2,816	9,733	12,549	1	6	7
Waitahu, Reefton	,, ..	38	,, ..	1	5′ to 15′ ..	Full ..	,, ..	16,468	87,666	104,134	4	24	28
Waitahu Syndicate, Reefton ..	,, ..	2½	,, ..	1	6′ ..	,, ..	,, ..	2,420	4,597	7,017	1	7	8
Terrace, Reefton	,, ..	20	,, ..	2	7′ and 50′	7″ and 9′ ..	,, ..	11,333	59,073	70,406	1	14	15
Comet, Inangahua Junction ..	,, ..	6½	,, ..	1	10′ ..	9′ ..	,, ..	60	17,194	17,251	..	2	2
Nicholls, Boatmans	,, ..	4½	,, ..	1	4′ 6″ ..	Full ..	,, ..	1,648	6,511	8,129	..	4	4

STATISTICS OF WORKINGS IN COAL-MINES, 1947—*continued*

Name of Mine and Locality.	Title held (Crown Lease or otherwise).	Number of Years worked.	Classification of Coal.	Number of Seams worked.	Thickness of Coal-seams.	Thickness worked.	System of Working.	Total Output for 1947.	Total Output to 31st December, 1946.	Total Output to 31st December, 1947.	Number of Persons ordinarily employed.		
											Above.	Below.	Total.
WEST COAST INSPECTION DISTRICT—*continued*								Tons.	Tons.	Tons.			
Banks, Waitahu	Crown lease	4	Brown	1	30′	Full	Opencast	23,188	52,528	75,716	9	..	9
Star, Murray Creek	,,	4	,,	1	10′	,,	,,	129	3,397	3,526	2	..	2
Royal, Rainy Creek	,,	3½	,,	1	5′ 6″	,,	Bord and pillar	1,742	4,142	5,884	..	4	4
Lewis and Party (Turner's), Murray Creek	,,	3	,,	1	12′	,,	Opencast	1,381	4,030	5,411	2	..	2
Chandler's, Murray Creek	,,	3	,,	1	35′	,,	,,	12,048	8,323	20,371	5	..	5
Golden Point, Boatmans	,,	2½	,,	1	4′ 6″	,,	Bord and pillar	1,005	1,926	2,931	..	2	2
Ferndale, Reddale Valley	,,	31	,,	1	12′	8′	Ditto	4,335	26,533	30,868	..	6	6
Garvey's Creek, Reefton	State reserve	1	Bituminous	1	15′ to 50′	10′	,,	4,538	..	4,538	5	19	24
Grey District													
Cliffdale, Ten-mile	State reserve	20	Bituminous	1	8′	Full	Bord and pillar	6,361	69,221	75,582	2	6	8
Blackball, Blackball	,,	56	,,	2	8′ to 17′	12′	Ditto	56,188	4,420,187	4,476,375	32	148	180
Blackball Creek, Blackball	,,	16½	,,	1	5′	Full	,,	5,985	181,001	186,986	1	8	9
Harrison's, Ten-mile	,,	15	,,	1	7′	,,	,,	6,314	56,301	62,615	1	6	7
Brachead, Dunollie	,,	27	,,	1	6′ to 9′	,,	,,	5,322	176,929	182,251	1	7	8
Briandale, Ten-mile	Crown lease	21	,,	1	6′	,,	,,	1,332	102,838	104,170	4	2	6
Wallsend, Brunnerton	Crown lease and freehold	24	,,	1	18′	8′ to 10′	,,	49,141	1,136,613	1,185,754	32	137	169
Dobson, Dobson	Crown lease	25	,,	1	9′ to 16′	10′	,,	61,995	1,421,735	1,483,730	40	176	216
Goldlight, Rewanui	State reserve	20	,,	1	6′	Full	,,	10,630	139,175	149,805	1	8	9
Hilltop, Ten-mile	,,	17	,,	1	20′	8′	,,	7,432	96,836	104,268	1	9	10
Kaye's, Ten-mile	,,	13	,,	1	10′	Full	,,	3,971	38,963	42,934	1	3	4
Hunter's, Rewanui	,,	27	,,	1	9′	,,	,,	9,512	155,155	164,667	2	7	9
Jubilee, Rapahoe	,,	20	,,	1	9′	,,	,,	5,684	80,707	86,391	4	12	16
Moody Creek, Dunollie	,,	25	,,	1	8′ to 10′	,,	,,	4,730	122,669	127,399	1	9	10
Cliffside, Nine-mile	,,	12½	,,	1	12′	9′	,,	7,183	57,303	64,486	3	7	10
New Point Elizabeth, Dunollie	,,	21	,,	1	6′	Full	,,	2,194	152,873	155,067	1	5	6
Old Runanga, Rewanui	,,	21	,,	1	4′ to 7′	,,	,,	7,393	138,829	146,222	3	7	10
Paparoa, Roa	Crown lease	39	Super-bituminous	2	8′ to 12′ 8′ to 16′	,,	,,	26,017	1,165,265	1,191,282	16	54	70
Schultz Creek, Twelve-mile	,,	23	Bituminous	1	2′ 6″	,,	,,	1,807	49,116	50,923	1	4	5
Halliday's, Dunollie	State reserve	17½	,,	1	7′	,,	,,	231	74,626	74,857	1	3	4
Strongman, Nine-mile	,,	9	,,	1	20′	9′	,,	94,759	686,002	780,761	66	177	243
Liverpool, Rewanui	,,	35	,,	2	8′ to 34′	8′	,,	86,133	4,229,476	4,315,609	85	209	294
Spark's, Rewanui	,,	25	,,	1	9′	Full	,,	5,157	87,695	92,852	2	7	9
Coaldale, Rapahoe	,,	11½	,,	1	3′ to 6′	,,	,,	2,648	196	2,844	1	4	9
Exhibition, Eight-mile	,,	½	,,	1	9′	,,	,,	163	..	163	1	4	5
Output of collieries now abandoned or suspended								..	9,826,559	9,826,559	..	..	..

Canterbury District														
Acheron No. 1	Freehold	6	Anthracite	1	8′	8′	Bord and pillar	1,247	7,963	9,210	3	4	7
Acheron No. 2	,,	½	Lignite	1	8′	7′	Ditto	285	..	285	..	2	2
Blackburn	Crown lease	17	,,	1	8′	7′	,,	5,143	53,459	58,602	2	7	9
Bonanza	Freehold	1	,,	1	7′	7′	,,	246	..	246	1	1	2
Brockley	,,	9	Anthracite	1	3′	3′	,,	359	7,363	7,722	1	1	2
Clearview	,,	25½	Lignite	1	10′	8′	,,	272	47,175	47,447	1	1	2
Klondyke	,,	19	,,	1	20′	10′	,,	11,222	139,288	150,510	2	17	19
Malvern	,,	1	,,	1	6′	6′	,,	1,366	..	1,366	..	3	3
Newburn	Crown lease	3	,,	1	5′	3′	,,	886	986	1,872	1	3	4
Steventon	Freehold	12½	,,	1	6′	6′	,,	3,216	58,009	61,225	2	4	6
Tripp's (Mount Somers)	,,	81	,,	1	15′	8′	,,	6,049	135,412	141,461	1	7	8
Victory	,,	7	,,	1	4′ to 14′	4′ to 9′	,,	1,229	4,395	5,624	1	1	2
Woodbank	Crown lease	22	,,	1	11′	10′	,,	3,260	26,164	29,424	2	4	6
North Otago District													
Airedale	Crown lease	21	Lignite	1	8′	8′	Bord and pillar	2,204	60,460	62,664	1	4	5
Ngapara	Freehold	70	,,	1	24′	14′	Ditto	2,737	66,246	68,983	1	4	5
Rockvale	,,	13	,,	1	8′	6′	,,	2,272	16,484	18,756	..	3	3
St. Andrews	,,	20	,,	1	6′ to 7′	7′	,,	1,866	103,327	105,193	1	3	4
Shag Point	Crown lease	26	,,	1	5′	5′	,,	503	448,978	449,481	1	2	3
Willetts	,,	15	,,	1	7′	7′	,,	1,529	17,176	18,705	..	2	2
Central Otago District													
Belmont	Freehold	½	Lignite	1	..	..	Opencast	54	..	54	2	..	2
Cairnmuir	Crown lease	7	,,	1	20′	12′	Bord and pillar	885	7,195	8,080	..	2	2
Cambrian	,,	2	,,	1	20′	20′	Opencast	340	106	446	1	..	1
Idaburn	Freehold	30	,,	1	30′	20′	,,	928	71,555	72,483	1	..	1
McPherson's	Crown lease	63½	,,	1	14′	14′	,,	2,917	131,454	134,371	2	..	2
Oturehua	,,	53	,,	1	20′	12′	,,	704	10,111	10,815	1	..	1
Shepherd's Creek	,,	70	,,	1	20′	10′	Bord and pillar	1,904	154,227	156,131	1	2	3
South Otago District													
Akatore	Crown lease	2	Lignite	1	8′	8′	Bord and pillar	3,232	5,016	8,248	3	7	10
Barclay's	Crown lease and freehold	3	,,	1	14′	12′	Ditto	3,101	2,940	6,041	1	3	4
Benhar	Freehold	84	,,	1	35′	8′ to 20′	,,	9,761	404,730	414,491	1	14	15
Kaitangata	Crown lease and freehold	71½	Brown	2	8′ to 20′	8′ to 20′	,,	81,705	6,744,643	6,826,348	49	151	200
Lovell's Flat Opencast	Freehold	1	Lignite	1	..	..	Opencast	876	..	876	1	..	1
New Fernhill No. 2	,,	4	,,	1	10′	6′ to 10′	Bord and pillar	897	11,105	12,002	..	..	..
New Fernhill No. 3	,,	2	,,	1	7′	6′	Ditto	898	988	1,886	1	2	3
New Fernhill No. 4	,,	2	,,	1	7′	6′	,,	5,313	1,558	6,871	2	5	7
Summerhill	,,	1½	,,	1	30′	30′	,,	10,610	1,721	12,331	4	24	28
Sunnyvale	Crown lease	2	,,	1	25′	25′	,,	1,963	1,950	3,913	..	3	3
Taradale	Freehold	3	,,	1	20′	20′	,,	2,897	4,417	7,314	1	3	4
Victory	Crown lease	3	,,	1	5′	5′	,,	2,539	3,549	6,088	1	3	4
Viewbank	Freehold	2	,,	1	30′	30′	Opencast	6,607	5,098	11,705	5	..	5
Wangaloa	Crown lease	26	,,	1	25′	20′	Bord and pillar	7,390	55,721	63,111	1	3	4
Wangaloa State Opencast	,,	2	,,	1	26′	24′	Opencast	40,379	32,437	72,816	20	..	20
Willowbank No. 1	Freehold	25	,,	2	15′	6′	Bord and pillar	6,878	126,505	133,383	2	7	9

STATISTICS OF WORKINGS IN COAL-MINES, 1947—*continued*

SOUTHERN INSPECTION DISTRICT—*continued*

Name of Mine and Locality.	Title held (Crown Lease or otherwise).	Number of Years worked.	Classification of Coal.	Number of Seams worked.	Thickness of Coal-seams.	Thickness worked.	System of Working.	Total Output for 1947.	Total Output to 31st December, 1946.	Total Output to 31st December, 1947.	Number of Persons ordinarily employed.		
											Above.	Below.	Total.
Southland District								Tons.	Tons.	Tons.			
Argyle	Crown lease	56	Lignite	1	12′	12′	Opencast	421	16,297	16,718	1	..	1
Birchwood	,,	23	Brown	1	5′ to 18′	5′ to 9′	Bord and pillar	25,095	497,243	522,338	18	37	55
Black Diamond	,,	31	,,	1	30′	20′	Opencast	13,253	428,024	446,191	20	.	20
							Bord and pillar	4,914					
Black Lion Opencast	,,	26	,,	1	30′	30′	Opencast	13,989	292,092	306,081	12	..	12
Boghead	Freehold	21	Lignite	1	23′	10′	Bord and pillar	7,737	191,213	198,950	3	6	9
Coster's	,,	11	,,	1	13′	13′	Opencast	936	12,355	13,291	1	..	1
Diamond Lignite	Crown lease	45	,,	1	36′	36′	,,	3,293	56,732	60,025	3	..	3
Gladfield	,,	3	,,	1	18′	13′	,,	654	2,985	3,639	1	..	1
Glenlee	Freehold	56	,,	1	14′	8′	Bord and pillar	2,549	57,927	60,476	..	2	2
Hardmac	Crown lease	1	,,	1	6′	6′	Opencast	2,931	912	3,843	4	..	4
Hedgehope	Freehold	8	,,	1	16′	16′	,,	9,244	61,870	71,114	7	..	7
Liberty Opencast	Crown lease	2	Brown	1	8′	8′	,,	1,078	1,072	2,150	2	..	2
Linton	Freehold	18	,,	1	30′ to 40′	30′ to 40′	Bord and pillar	29,021	2,212,903	2,291,979	31	121	152
Linton	Crown lease	33	,,	1	30′ to 40′	30′ to 40′	Ditto	50,055					
Mataura Paper-mills	Freehold	9	Lignite	1	20′	20′	Opencast	27,618	175,928	203,546	4	..	4
Midway	,,	1	,,	1	15′	14′	,,	825	..	825	1	..	1
Mossbank	Crown lease	7	Brown	1	17′ to 23′	8′	Bord and pillar	26,060	784,519	810,579	11	36	47

Newvale No. 1	Freehold	7	Lignite	1	15′	15′	Opencast	5,234	36,134	41,368	3	..	3
Newvale No. 2	,,	1	,,	1	6′	6′	,,	2,619	..	2,619	3	..	3
Nightcaps	,,	2½	,,	2	30′	30′	,,	4,317	4,327	8,644	4	..	4
Ohai State Opencast	Crown lease	2½	Brown	1	20′	15′	,,	6,581	85,380	91,961	14	..	14
Ota Creek	,,	67	Lignite	1	10′	10′	,,	1,786	39,453	41,239	3	..	3
Raby	Freehold	9	,,	1	20′	20′	,,	3,060	35,849	38,909	1	..	1
Star	,,	16	Brown	1	20′	20′	Bord and pillar	40,481	318,112	358,593	17	45	62
Starlight	,,	3½	Lignite	1	4′	4′	Opencast	3,459	10,145	13,604	2	..	2
Telfer's	Crown lease	4	,,	1	3′	3′	,,	139	299	438	1	..	1
Terrace	Freehold	6	,,	1	17′	8′	Bord and pillar	1,679	22,391	24,070	..	1	1
Waimeamea	Crown lease	4	Brown	1	16′	16′	Ditto	5,752	42,433	48,185	2	4	6
Waimumu	Freehold	19	Lignite	1	30′	30′	Opencast	17,124	93,233	110,357	6	..	6
Wairaki	Crown lease and freehold	33	Brown	2	7′ to 25	7′ to 25′	Bord and pillar	65,553	995,157	1,060,710	28	70	98
Output of collieries now abandoned or suspended								..	11,701,476	11,701,476	..	..	..
Totals, Southern District, South Island								616,126	27,146,372	27,762,498	324	624	948
Totals, West Coast District, South Island								1,155,579	53,988,391	55,143,970	741	1,667	2,408
Totals, Northern District, North Island								980,020	30,445,563	31,425,583	638	1,448	2,086
								2,751,725	110,580,326	114,332,051	1,703	3,739	5,442
Output prior to 1890 not included in statistics								..	..	296,653	..	..	..
Shale exported, 1914								..	..	21	..	..	..
										114,628,725			

APPENDIX C

REPORT OF BOARD OF EXAMINERS

Mines Department,
Wellington, 23rd February, 1948.

The Under-Secretary, Mines Department, Wellington.

Sir,—

On behalf of the Boards of Examiners under the Coal-mines and Mining Acts, I have the honour to submit the following report on the work of the Boards during the past year.

Coal-mines Act.—The annual examinations for candidates for Mine-managers' Certificates were held at Huntly, Reefton, Westport, Greymouth, and Dunedin on 7th, 8th, and 9th October, 1947. In addition, examinations were held at Huntly and Greymouth for Mine Surveyors' Certificates and at Huntly for Electricians' Certificates.

The annual examinations for Underviewers' and Firemen-deputies' Certificates were held at Dunedin on 23rd September; at Huntly on 10th, 11th, 12th, and 13th November; at Greymouth on 11th, 12th, 13th, and 14th November; and at Westport on 18th and 19th November.

One special examination for Underviewer's Certificate was held during the year.

The applications of five candidates for examination who were unable to prove the prescribed minimum underground service were declined, as well as the late application of another candidate.

The total number of candidates sitting the various examinations under the Coal-mines Act was 75, a decrease of 35 as compared with the previous year.

Forty-seven Gas-testing Certificates were granted to candidates during 1947, while fifty-eight holders of Gas-testing Certificates more than five years' old passed a re-examination in gas-testing. A duplicate of one lost Gas-testing Certificate was issued.

Pursuant to subsection (5) of section 6, Coal-mines Amendment Act, 1937, the certificates of two underviewers and twenty firemen-deputies were endorsed by Inspectors of Coal-mines.

The Board also recorded in its register particulars of forty-four Certificates of Proficiency in mine-rescue work issued to men who had undergone a course of instruction in the use of self-contained breathing-apparatus and in other related subjects and had passed a practical examination.

One certified copy of a lost Fireman-deputy's Certificate was issued pursuant to section 55, Coal-mines Act, 1925.

The Board cancelled eight partial passes for certificates under the Coal-mines Act, the holders having failed to complete the full examination within the period of years allowed.

The list of text-books considered suitable for students for examinations under the Coal-mines Act was revised and copies distributed to Schools of Mines.

Messrs. F. Carson and W. Parsonage, whose terms as members of the Board expired during 1947, were each reappointed by His Excellency the Governor-General for a further term of three years. Mr. J. Makinson, who, for some years past, has rendered excellent service as an examiner in the North Auckland District for Underviewers' and Firemen-deputies' Examinations, relinquished his appointment in October, 1947.

During the last few years the Board has been deeply concerned at the low standard of training of candidates presenting themselves for examination for Mine-managers' and Mine Surveyors' Certificates and the low percentage of passes obtained. At the last annual meeting of the Board the matter was discussed at length, and members were unanimous that the time was opportune for steps to be taken to find means for improving the technical education of intending mine-managers and mine surveyors. A report has been prepared setting out the Board's views on what should be done to remedy the position, and this report has been submitted to the Hon. Minister of Mines for his consideration.

The only legislation passed affecting the Board was contained in the Coal-mines Regulations 1939, Amendment No. 3, which came into force in June, 1947, and which revoked subclause (1) of clause 11 of the principal regulations and substituted a new subclause therefor. This new subclause contains the syllabus for the Mine Surveyors' Examination, wherein is incorporated certain minor amendments suggested by the Board in 1944.

In April, 1947, advice was received from the Secretary, Board for Appointing Examiners, Sydney, that his Board had resolved—

(*a*) That First- and Second-class Mine Managers' Certificates granted under the New Zealand Coal-Mines Act, 1925, be accepted for registration in New South Wales, subject to the holder of a certificate applying for registration of his certificate satisfying the Board's examiners that he had a proper knowledge of the Coal-mines Regulation Act, 1921–1941.

(*b*) That Mine Surveyors' Certificates be accepted for registration in New South Wales.

Mining Act.—The annual examinations for candidates for First-class Mine-managers' Certificates were held at Greymouth on 7th, 8th, and 9th October, 1947. No examinations for Battery Superintendents' or Dredgemasters' Certificates were held.

It is recorded with deep regret that John Francis Downey, a member of the Board for twelve years, passed away at Wellington in July, 1947, barely two weeks after his retirement from the Board. His death is felt keenly by the Board and by the mining industry, to which he has made so many valuable contributions and rendered such eminent service. The vacancy so caused on the Board was filled by the appointment of Mr. R. A. Rutherfurd, A.O.S.M. Messrs. T. B. Gillooly, A. F. Lowrie, and J. R. Noble, whose terms as members expired during 1947, were each reappointed for a further term of three years.

General.—The Boards dealt with a considerable number of minor matters arising out of applications for and issue of certificates, none of which, however, calls for special mention.

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

Examination.	Number of Candidates.			Number of Certificates issued.	
	Examined.	Passed.	Partial Pass.	By Examination.	By Recognized Credentials.
Coal-mines Act, 1925					
Mine-managers' Certificates—					
(*a*) First Class—					
Written examination	12	1*	..	1	..
Oral examination	1				
(*b*) Second Class—					
Written examination	5	1	..	1	..
Oral examination	1				
Underviewer's Certificate	20	11	1	12†	..
Fireman-Deputy's Certificate	33	15	14	23‡	..
Mine Surveyor's Certificate—					
Written examination	4	1	1	1	..
Oral examination	2				
Electrician's Certificate—					
Written examination	1	..	..	..	..
Practical examination	1				
Mining Act, 1926					
Mine-managers' Certificates—					
(*a*) First Class—					
Written examination	1	..	1	..	..
Oral examination	1				
(*b*) Second Class—					
Written examination	..	..	..	..	..
Oral	..	..	..	..	..
Battery Superintendent's Certificate—					
Written examination	..	..	..	..	..
Oral examination	..	..	..	..	..
Dredgemasters' Certificates—					
Class A—					
Written examination	..	..	..	..	..
Oral examination	..	..	..	..	..
Class B—					
Written examination	..	..	..	..	..
Oral examination	..	..	..	..	..

* This candidate had previously passed the written examination and portion of the oral examination. † Includes one candidate who passed the 1946 examination but the issue of whose certificate was deferred pending production of First-aid Certificate. ‡ Includes eight candidates who passed the 1946 examination but the issue of whose certificates was deferred pending the production of First-aid Certificates.

A list of the certificates issued since my last report is appended :—

COAL-MINES ACT, 1925

FIRST-CLASS MINE-MANAGER'S CERTIFICATE

Issued after Examination.—Rarity, John, Blackball.

SECOND-CLASS MINE-MANAGER'S CERTIFICATE

Issued after Examination.—Kerry, Edward, Reefton.

MINE SURVEYOR'S CERTIFICATE

Issued after Examination.—Crawford, Albert William, Benneydale.

Underviewer's Certificate

Issued after Examination.—Burt, T., Benneydale; Cairns, D., Puketihi; Carpenter, G. F., Dunollie; Duncan, H., Nightcaps; Lundon, J. W., Greymouth; McKenney, E., Granity; Robertson, J. F., Rotowaro; Shaw, W. C., Rotowaro; Smith, G. H., Rotowaro; Taylor, C. J., Owen River; Williams, J. R., Blackball; Williamson, J. B., Glen Massey.

Fireman-Deputy's Certificate

Issued after Examination.—Adams, A. J., Nightcaps; Allen, D., Wallsend; Barnes, J. L., Rotowaro; Bennett, R., Stockton Mine; Clark, A., Dobson; Cohen, A. O., Cronadun; Crook, H. W., Rotowaro; Dick, J. R., Kaitangata; Ferguson, T. S., Kaitangata; Harlock, J. W., Huntly; Kearns, W., Tatu; Lester, A. V., Benneydale; Lundon, J. W., Greymouth; McKenzie, W. J., Reefton; Matchett, P. W., Kaitangata; Neilson, L. D., Blackball; Park, G. H., Benhar; Rattray, A. P., Denniston; Sayers, A. H., Ohai; Scurr, T. L., Dunollie; Stevens, G. F., Huntly; Stewart, A., Benhar; Story, W. H., Reefton.

I have, &c.,
R. H. Schoen,
Chairman of Boards.

Approximate Cost of Paper.—Preparation, not given; printing (933 copies), £225.

By Authority: E. V. Paul, Government Printer, Wellington.—1948.
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