

1909.
NEW ZEALAND.

INSPECTION OF COAL-MINES REPORT.

(“THE COAL-MINES ACT, 1908.”)

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

MR. FRANK REED, M.I.M.M., Inspecting Engineer, to the UNDER-SECRETARY, Mines Department.

SIR,—

Mines Department, Wellington, 15th April, 1909.

I have the honour to present the annual reports of inspection, together with statistical information in regard to the coal-mines of the Dominion for the year ended 31st December, 1908.

The reports are divided into the following sections :—

- I. Output of Mineral.
- II. Persons employed.
- III. Accidents.
- IV. General Remarks.

Annexures—

- (a.) Inspectors' Reports.
- (b.) Mine-managers' Examinations, and Certificate-holders.
- (c.) Statistics of Working-collieries.

SECTION I.—OUTPUT OF MINERAL.

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

Class of Coal, &c.	Northern District.	West Coast District.	Southern District.	Total.
	Tons.	Tons.	Tons.	Tons.
Bituminous and semi-bituminous coal ...	147,405	1,057,807	...	1,205,212
Pitch-coal	...	2,801	14,658	17,459
Brown coal... ..	197,522	2,958	338,661	539,141
Lignite	...	...	99,163	99,163
Totals	344,927	1,063,566	452,482	1,860,975

As compared with the output for the preceding year, the above statement shows an increase of 29,966 tons.

The following statement shows the production, &c., of the principal collieries :—

Name of Colliery.	Locality.	Class of Coal.	Output for 1908.	Total Output to 31st December, 1908.	Total Number of Persons ordinarily employed.
<i>Northern District.</i>					
Hikurangi Coal Company (Limited) ...	Hikurangi...	Semi-bituminous	Tons. 61,071	Tons. 581,593	74
Taupiri Coal-mines (Limited) ...	Huntly ...	Brown ...	175,777	1,900,362	357
Northern Collieries Company (Limited)	Hikurangi...	Semi-bituminous	50,275	284,246	74
<i>West Coast District.</i>					
Westport Coal Company (Limited) (Coalbrookdale Collieries)	Westport	Millerton, bituminous	316,601	2,651,061	473
		Denniston...	296,617	5,026,377	574
New Zealand State Coal-mines	Seddonville (Westport)	Bituminous	55,231	209,410	100
	Point Elizabeth (Grey-mouth)	"	234,250	795,458	400
	Blackball...	"	85,348	1,026,555	150
Tyneside Proprietary Coal Company (Limited)	Brunnerton	"	40,304	295,059	160
<i>Southern District.</i>					
New Zealand Coal and Oil Company (Limited)	Kaitangata	Brown ...	110,315	2,312,680	296
Nightcaps Coal Company (Limited) ...	Nightcaps...	" ...	48,487	616,263	92
Other collieries, in all districts ...	...	Various ...	386,699	11,423,875	1,144
Totals	...	...	1,860,975	27,122,939	3,894

The most important feature in connection with the coal-mining industry has been the activity displayed on the West Coast bituminous coalfields, where new collieries are being opened and equipped on a scale of considerable magnitude. The quality of the coal from these fields is of a high class, the coal being used by the Admiralty and to a considerable extent by ocean-going vessels. On the northern coalfields activity has also been displayed in the development of new areas, and the acquisition by the principal companies of mining rights over freehold property. The equipment of the mines all over the country has been greatly improved.

SECTION II.—PERSONS EMPLOYED.

Inspection District.	Average Number of Persons employed during 1908.		
	Above Ground.	Below Ground.	Total.
Northern	122	512	634
West Coast	562	1,646	2,208
Southern	308	744	1,052
Totals, 1908	992*	2,902	3,894*
Totals, 1907	1,143	2,767	3,910

*The decline in the number of persons employed is confined to those employed above ground, and this is due to the completion of extensive surface works on the West Coast coalfields.

SECTION III.—ACCIDENTS.

In 1908 four separate fatal accidents occurred in and about the coal-mines of this Dominion, causing the loss of five lives. Compared with the previous year, there is a decrease of six in the number of fatal accidents, and of seven in the number of lives lost. The actual number of deaths by itself does not afford a complete test of the comparative safety or danger of the coal-mining industry in 1908. True comparisons can only be made by taking into account either the number of persons employed or the quantity of mineral obtained. The following summary of the annual ratio of persons killed per 1,000 employed in the collieries of the most important countries of the world during the last ten years, regarding which official statistics have been published, will permit of that comparison by which the safety or danger of the coal-mines in this Dominion may be tested.

Country.	Annual Ratio of Persons killed per 1,000 employed.	Years.
United Kingdom	1.29	1897-1906 (ten years).
United States of America, and Canada	3.33	1898-1907 "
Prussia (bituminous-coal mines)	2.13	1897-1906 "
" (brown-coal mines)	2.07	" "
Austria (bituminous-coal mines)	1.03	" "
" (brown-coal mines)	1.74	" "
France	1.81	" "
Belgium	1.06	" "
India	0.86	1898-1906 (nine years).
Natal	4.91	1897-1906 (ten years).
New South Wales	2.14	" "
Queensland	1.20	" "
Victoria	2.28	" "
New Zealand	1.56	1899-1908 "

It will be seen that New Zealand occupies the sixth place as regards the safety of the coal-miner, among fourteen coal-producing countries.

The following is a summary of fatal and non-fatal accidents classified, and cause, in this Dominion during 1908.

	Fatal Accidents.		Non-fatal Accidents.	
	Number of Separate Fatal Accidents.	Number of Deaths.	Number of Separate Non-fatal Accidents.	Number of Persons injured, including those injured by Accidents which proved Fatal to their Companions.
Explosions of firedamp	...	...	1	3
Falls in mine	3	4	6	7
Shaft accidents	...	...	...	...
Miscellaneous—Underground... ..	...	...	15	15
On surface	1	1	1	1
Totals	4	5	23	26

Lives lost per 1,000 persons employed, 1.28.

The following statement shows the tons of mineral raised (coal and shale), persons employed, lives lost, &c., from 1878 to 1908 :—

Year.	Output of Mineral.	Persons employed.			Tons of Mineral raised per each Person employed Underground.	Tons of Mineral raised per Life lost.	Persons employed per each Life lost.	Lives lost per Thousand Persons employed.	Number of Deaths.
		Above.	Below.	Total.					
Prior ...	709,931	...	...	...	...	...	...	...	...
1878 ...	162,218	147	366	513	443	4,771	15	66·27	34†
1879 ...	231,218	...	...	802	...	115,609	401	2·49	2
1880 ...	299,923	...	...	1,038	...	149,961	519	1·92	2
1881 ...	337,262	...	...	963	...	337,262	963	1·04	1
1882 ...	378,272	...	...	1,043	...	189,136	521	1·91	2
1883 ...	421,764	361	888	1,249	475	210,882	624	1·60	2
1884 ...	480,831	393	890	1,283	540	160,277	421	2·34	3
1885 ...	511,063	338	1,145	1,483	456	170,354	494	2·01	3
1886 ...	534,353	392	1,213	1,605	440	*	*	*	0
1887 ...	558,620	388	1,111	1,499	503	139,655	375	2·66	4
1888 ...	613,895	414	1,275	1,689	481	153,474	422	2·36	4
1889 ...	586,445	466	1,251	1,717	261	146,611	313	2·37	4
1890 ...	637,397	512	1,334	1,846	477	79,674	231	4·33	8
1891 ...	668,794	416	1,277	1,693	523	167,198	423	2·36	4
1892 ...	673,315	485	1,196	1,681	563	673,315	1,681	0·66	1
1893 ...	691,548	590	1,298	1,888	533	138,309	377	2·64	5
1894 ...	719,546	506	1,393	1,899	516	119,924	316	3·16	6
1895 ...	726,654	525	1,274	1,799	618	145,331	360	3·33	5
1896 ...	792,851	590	1,347	1,937	588	12,013	29	34·07	66‡
1897 ...	840,713	531	1,381	1,912	609	210,178	478	2·09	4
1898 ...	907,033	556	1,447	2,003	627	907,033	2,003	0·49	1
1899 ...	975,234	554	1,599	2,153	609	325,078	717	1·39	3
1900 ...	1,093,990	617	1,843	2,460	593	273,497	615	1·62	4
1901 ...	1,239,686	688	2,066	2,754	600	413,228	918	1·09	3
1902 ...	1,365,040	803	2,082	2,885	655	682,520	1,443	0·69	2
1903 ...	1,420,229	717	2,135	2,852	665	355,057	713	1·40	4
1904 ...	1,537,838	763	2,525	3,288	609	384,459	822	1·21	4
1905 ...	1,585,756	833	2,436	3,269	651	264,293	546	1·83	6
1906 ...	1,729,536	1,174	2,518	3,692	687	288,256	615	1·62	6
1907 ...	1,831,009	1,143	2,767	3,910	662	152,584	326	3·07	12
1908 ...	1,860,975	992	2,902	3,894	641	372,195	778	1·28	5
Totals ...	27,122,939	...	...	...	...	...	...	...	210

* No life lost.

† Year of Kaitangata explosion.

‡ Year of Brunner explosion.

SECTION IV.—GENERAL REMARKS.

MINING OPERATIONS.

Northern Inspection District.—An increase of 27,950 tons in the annual output of coal from the mines of the Auckland Province has to be recorded.

The original property of the Hikurangi Coal Company (Limited) being nearly worked out, this company have acquired an area south-west of the Township of Hikurangi, and have proved thereon by boreholes at depths varying between 200 ft. and 500 ft., the existence of a 10 ft. seam, which will in all probability give a new lease of life to this company. During the year the respected manager of this colliery, Mr. Moody—who for a period exceeding a quarter of a century has occupied a prominent position on the northern coalfields—retired from the management of the Hikurangi Company.

At the Northern Colliery some difficulty has been experienced by subsidence, owing to pillar-extraction in proximity to the air-shaft and airways, but ventilation will be restored and a considerable area to the dip of the present workings will be opened up by a new airway, which is now being driven to overcome the difficulty.

Mining operations at the Kiripaka Colliery have been confined to the solid coal, this mine being still in the early stages of development. An extensive coal-bearing area has been proved by boring on this property.

The output of the Taupiri Coal-mines (Limited) for the year amounted to 175,777 tons, being an increase of 13,731 tons; the output from this property now exceeds that of all the other North Island collieries combined. This company have, by the acquisition of the Taupiri West Com-

pany's property and of the mineral rights over private property, now secured a compact area exceeding 15,000 acres, covering the most accessible portion of the important Waikato Coalfield, which is traversed by the Main Trunk Railway and by the navigable River Waikato. Upon the completion of the purchase of the Taupiri West property, headings were at once commenced for the purpose of making an underground connection with the Taupiri Company's mine. These headings when completed will thus provide an outlet by means of the Taupiri West shaft on the western side of the river, in which locality the principal operations of the Taupiri company are now directed. The consideration of the mine-owners is now being directed to the advisability of bridging the Waikato and to sinking a new shaft to the dip of the present workings.

Recent explorations on the Waikato Coalfield, the most extensive and unbroken of the known workable coalfields of this Dominion, have proved its extension to the southward of the Akatea Village Settlement, a distance of about thirteen miles from the northern boundary of the Taupiri Company's property on the same coalfield. An area of at least 25,600 acres of the Waikato Coalfield has been practically proved to be coal-bearing. The quality of the coal exposed by many outcrops, the thickness of the seam, and other characteristics, prove that the thick seam, as worked at the Taupiri mine, extends over a very large area which is almost entirely freehold grazing property.

West Coast Inspection District.—The Puponga Company have improved their equipment by the installation of coal-cutters actuated by compressed air; and underground developments are being pushed ahead.

On the Buller Coalfield, the most productive in the Dominion, the Westport-Stockton Mine commenced active operations towards the latter part of the year, and mining has since been carried out by double shifts on a section off the B inclined haulage-tunnel (in coal) by the bord-and-pillar system of working. It is reported that the extensive electrical installation at this colliery is giving every satisfaction, and that the ventilation of the mine is well attended to. At the Millerton Colliery, the property of the Westport Coal Company (Limited), the equipment and development of the Mangatini section has been the most important work undertaken during the year. Upon this section it is proposed to instal coal-cutting machinery and employ an electrically driven "Sirocco" fan. The most important developments at the Denniston Colliery, the property of the same company, comprise the opening-up of the Waratea section by a main stone drive of considerable length. In other sections of this mine the solid work is kept well ahead of pillar-extraction, and the proportion of coal extracted is much greater than formerly. On the Grey Coalfield a strike at the Blackball Colliery extending over a period of eleven weeks acted detrimentally to the annual output, which, if this had not occurred, would, at the rate of production during the remaining part of the year, have shown an increase over former years. This company is improving its surface arrangements by the erection of storage-bins of 2,500 tons capacity, which are connected to modern screening and conveying equipment erected in convenient proximity to the Ngahere-Blackball Railway, now nearing completion. For the purpose of combating underground fires, if such appear, this mine is worked on the panel system, which permits immediate isolation of an affected area.

The extensive surface arrangements of the Paparoa Coal-mining Company (Limited), are nearing completion. The rock tunnels and viaduct on the main haulage-inclines are already completed, and a single-inlet "Sirocco" fan of 105 in. diameter (which it is estimated will produce 110,000 cubic feet of air per minute) has been installed. This mine will enter the list of productive collieries during the year.

The property known as Thornton's Lease, containing 1,640 acres, to the eastward of the old Brunner Mine, has been acquired by the North Brunner Coal Company (Limited), who, after a considerable amount of prospecting, have decided to lay down a colliery. A bridge across the River Grey, and a line of endless-rope haulage about 67 chains in length, will be necessary to connect the mine with the Government railway at Stillwater Junction, distant nine miles from the Port of Greymouth.

The Tyneside Colliery was irrecoverably flooded out on the 8th May by the River Grey, and surface flood-water entering the mine by old workings and broken strata, and the pumps being incapable of dealing with the influx of water, the workings became inundated. The pillar-extraction at this mine was within a few months of completion, so the loss of the mine has not been a very serious matter, as there was plenty of other work for the forty miners engaged at the mine prior to inundation.

Southern Mining District.—The underground developments at the Kaitangata Colliery, in the section to the eastward of the No. 7 fault, have proved an extensive area containing three seams—viz., the main 18 ft. and 6 ft. seams; but of these the former only is at present being worked, it being adequate for existing requirements. The panel system is now employed at this mine for the purpose of isolating any underground fires which may occur, and all dross is filled into trucks and removed from the mine as an extra precaution against spontaneous fires. As firedamp is occasionally reported as occurring at the coal-faces, and accidents therefrom have happened, safety-lamps only are permitted in this mine, these lamps being first tested with compressed air and then locked before being permitted to enter the mine. At the same company's adjoining Castle Hill Colliery similar precautions are taken.

At the Nightcaps Colliery the boundaries of the property having been reached by solid work on the bord-and-pillar system, the extraction of pillars is being carried out by working from the boundary homeward, and it is stated that a high proportion of extraction amounting to 85 per cent. has been attained. The area in which the fire occurred during 1907 is reported to be sealed up by stoppings. A considerable proportion of the output of this mine is obtained by opencast or quarrying; the seam being of considerable thickness. During the year Mr. John Lloyd, who for over twenty years has occupied the position of certificated manager of this mine, relinquished the same owing to indisposition.

EQUIPMENT OF COLLIERIES.

Coal-mining operations in New Zealand have been considerably facilitated by the hilly character of the country and the comparative shallowness of the coal-seams, which conditions have permitted the majority of the mines to be worked from the outcrop by means of adits or inclined planes, usually level-free, thus avoiding the use of winding and pumping machinery, and in many instances of hauling-engines also, and permitting small mines, with a comparatively insignificant output, to be profitably worked. At only four mines is the coal raised by steam-power from shafts—viz., at Taupiri and Taupiri West, and at two small pits in Otago; at the remaining 160 mines haulage-planes and adits are adopted.

The haulage systems at the chief collieries on the Buller and Grey Coalfields are of considerable magnitude, even when compared with those in Europe and America, and are therefore of more than passing interest. These mines being situated on the coastal ranges at considerable altitudes above sea-level it is necessary to lower the coal by means of surface tramways worked by various systems of haulage. The following summary of the principal features of the most important inclines connecting the mines with the Government railways will serve to show the magnitude of the outside haulage-systems:—

Name of Colliery.	Section of Incline.	Horizontal Length.	Maximum Gradient.	Vertical Height.	General.
Denniston	Upper	M. ch. 0 33	1 in 3·3	Ft. 834	Single railway-wagons of 6½ tons capacity are lowered on a 3 ft. 6 in. gauge at the rate of 15 wagons per hour.
"	Lower	0 50	1 in 1·2	864	
Millerton	Upper	0 70	...	1,660	Tubs of 22 cub. ft. capacity are lowered by self-acting endless-rope tramway of 24 in. gauge at a speed of 2½ miles per hour.
"	Lower	0 51	...		
Westport-Stockton	Top	2 20	1 in 21·2	2,376	Electric traction by 20-ton locomotives on top section. From thence tubs of 30 cwt. capacity are lowered on endless-rope tramway of 3 ft. gauge. Maximum gradient for rope haulage, 1 in 3. The lower section is worked by the "main and tail rope" system.
"	Intermediate	0 39	1 in 6·7		
"	"	0 33	1 in 4		
"	Lower	0 28	1 in 63		
Paparoa	Upper	0 52	1 in 12	255	Coal-tubs lowered by endless-rope self-acting tramway.
"	Lower	0 44	1 in 3	850	

Hydraulic brakes are in general use for the purpose of regulating the speed on all the self-acting rope-haulage inclines. The pulleys or drums at the top of each haulage section are fitted with cranks keyed on to the ends of the shafts, which are attached by connecting-rods to the pistons of three water-cylinders fitted with cataract governors, the water in the cylinders checking or arresting the motion of the pistons at the will of the brakeman. These brakes, which were introduced by the late Mr. R. B. Denniston early in the eighties, are far more effective and reliable, and are less destructive to the haulage-ropes, than ordinary friction-brakes.

Great improvements have recently been effected in the mechanical ventilation of the mines, for, whereas in 1891 only three ventilating fans were employed, during 1908 twenty-two had been installed, the fans most favoured being of the "Sirocco," Waddle, and Hayes types.

Multivane turbine fans of the "Sirocco" type having recently been installed at the collieries of the Westport, Paparoa, and Taupiri Companies and at the State collieries in this Dominion, a reference to the special features of this type of ventilator may be of interest. Until recent years it was the general opinion of mining engineers that the fans required for ventilation must necessarily be of large diameters. When, however, the turbine or multivane mine-fan was invented, it became very evident that this opinion needed considerable modification, and it became still more obvious when the results obtained with these fans under actual working-conditions were made public.

The very first installation where the "Sirocco" multivane fan (see drawings) was used bore out the makers' claims, a 75-in.-diameter fan of the double-inlet type not only doing the work of two other fans whose aggregate diameters amounted to 10½ times that of the "Sirocco," but even delivering a 12-per-cent. larger volume of air. This was only the first of many similar instances. At another mine in Great Britain a 77-in.-diameter "Sirocco" is replacing a fan measuring 44 ft. in diameter, while many others of less than 100 in. are being installed in place of fans of the old type measuring 30 ft. to 40 ft.

Interesting though this question of reduced diameter undoubtedly is from the mechanical standpoint, it would be of little value if it could not show some advantageous features when considered also from a commercial aspect. The chief advantage of fans of small diameter lies in the fact that they can be run at comparatively high speeds, making it possible to couple them directly to motors or engines which develop the required power at a high speed of rotation.

The first cost of the motor or engine is consequently very much lower than is the case of a slow-running fan, which often could not be direct-coupled, owing to slow speed necessitating the use of a large-size motor or engine with the proportionate increase of cost.

The reduced dimensions of the high-speed fans lead to a very marked economy in the cost of erection, owing to the small amount of brickwork and masonry necessary to provide their housing, and this fact is clearly evidenced when taking the actual space occupied by the fan-wheels into con-

sideration. Thus, taking an actual installation as an example where a wheel occupying a space of 325 cub. ft. is replacing another occupying 15,000 cub. ft., it is obvious that the amount of brickwork required to enclose the former is very much less than that needed by the latter. An additional saving is frequently effected in the reduced size of the engine and motor house, due to the use of a high-speed in place of a low-speed, and consequently larger-dimensioned, machine.

Although the "Sirocco" multivane fans are small in diameter, they are capable of fulfilling large duties, as is borne out by a number of installations. As instances may be noted a double-inlet fan 119 in. in diameter, which is capable of passing 300,000 cub. ft. per minute at 3 in. water gauge, while another measuring 140 in. can deliver 375,000 cub. ft. per minute at 4 in. water gauge. Furthermore, one of these fans is now in course of construction in Great Britain, which will have an output of half a million cubic feet at 6 in. water gauge, and will be direct-coupled to a motor of 1,000-horse power.

It has been sometimes argued that the slow-speed fans of large diameters show far better efficiencies than the smaller high-speed fans. This, however, cannot be the case, considering that a turbine fan is able to give an efficiency of more than 70 per cent. when tested under actual working-conditions in mines.

The change that has been brought about in mine-ventilation by the introduction of the multivane fan not only counts for economy, it counts also for increased safety and efficiency.

The application of electricity is now becoming general at the more up-to-date of the collieries; the Westport-Stockton Mine, recently opened, having installed a complete (three-phase) plant for coal-cutting, ventilation, electric traction, and lighting. The Point Elizabeth State No. 2 Colliery will also utilise this power somewhat extensively, and the Westport Coal Company propose to instal the power for ventilation and perhaps coal-cutters also.

COAL-SHIPPING PORTS.

Westport.

The following official statement for the year 1908, furnished by the Secretary to the Westport Harbour, will serve to illustrate the progress of this the chief coal-shipping port of the Dominion:—

Coal-output for year 1908:—

Westport Coal Company (Limited)	..	..	..	613,216 tons coal.
Seddonville State Coal-mine	..	..	..	42,550 " "
"	..	..	..	11,570 " briquettes.
Westport-Stockton Coal Company (Limited)	..	..	..	2,930 " coal.
Total	..	..	..	670,266 tons.

The coal-output for 1908 was 16,337 tons more than in the year 1907, and the output of briquettes from the State Coal-mine was 8,781 tons more in 1908 than in 1907, the total increase for the year 1908 over 1907 being 25,118 tons.

The volume of shipping for the year 1908 was as follows:—

				Steamers.	Sailers.	Registered Tonnage.
Inwards	..	..	..	1,115	18	591,714
Outwards	..	..	..	1,113	18	591,366
Total	..	..	..	..	..	1,183,080

The port is now capable of easily dealing with shipments of coal up to 26,000 tons per week.

Our coal-export has very gradually and systematically grown, as shown below:—

		Yearly Output.			Yearly Output.
		Tons.			Tons.
1885	..	78,094	1900	..	379,917
1890	..	160,214	1905	..	547,280
1895	..	222,928	1908	..	670,266

The Harbour Board's revenue for the year 1908 amounted to £85,970 13s.

The average depths of water on bar and in river-fairway at high water for the year 1908 were as follows: Bar, 22 ft. 7 in.; river-fairway, 23 ft. 4 in. The depths of water on bar during the year 1908 as recorded were—18 ft. to 20 ft., 12 days; 20 ft. to 22 ft., 110 days; 22 ft. to 24 ft., 172 days; 24 ft. to 26 ft., 72 days.

The rainfall for the year 1908 was 73.63 in.

Greymouth.

The following are the official returns from the Port of Greymouth, from whence is shipped the product of the Grey Coalfield. A small increase in the registered tonnage of the vessels entering the port is recorded.

Average depth of water on the bar at high water, 21 ft. 7 in.; average depth of water in river at high water, 19 ft. 8 in.

Number of days bar was navigable, 343.

Tonnage of vessels entering port: 686 steamers, 338,820 tons register; 41 sailing-vessels, 8,652 tons register: total, 347,472 tons register.

Exports: Timber, 50,531,029 sup. ft.; coal, 329,107 tons; bricks, 1,150 tons; coke, 2,344 tons; flax, 1,058 bales; wool, 767 bales; gold, 72,926 oz.

Berthage accommodation, 2,770 ft. A tidal dock in Kororo Lagoon, giving an additional berthage accommodation of 2,000 ft., is now being constructed, 700 ft. having been completed.

I have, &c.,

FRANK REED,

Inspecting Engineer and Inspector of Mines.

ANNEXURE A.

REPORTS OF INSPECTORS OF MINES.

Mr. BOYD BENNIE, Inspector of Mines, Thames, to the UNDER-SECRETARY, Mines Department.

SIR,—

Inspector of Mines' Office, Thames, 27th February, 1909.

In compliance with section 78 of "The Coal-mines Act, 1908," I have the honour to report on the coal-mines in the Northern District for the year ended 31st December, 1908.

Kawakawa Mine (Samuel Neill, mine-manager).—Operations have been confined to the outcrop section of the property, formerly worked by the Bay of Islands Coal Company. Some pillars have been located and extracted; but the result has been disappointing, and not as remunerative as was expected. The quality of the coal is constantly deteriorating, owing to atmospheric influences. Late in the year attention was directed to what is known as Moody's outcrops, and some large pillars were located; but, owing to the necessity of relaying rails and repairing the old line, it is doubtful whether the place can be profitably worked. I inspected the operations during the year, and found that the work was being carefully carried out. The output for the year was 980 tons of coal. It is to be regretted that no company has been found to undertake the systematic prospecting of the Kawakawa property to the south-west section, and also the prospecting of the land extending along the Hikurangi-Kawakawa Railway route, where the prospects are favourable.

Kitinikau Syndicate.—Early in the year this syndicate acquired the old Whau mining property, and commenced prospecting on the outcrop of the coal-seam in the vicinity of the old colliery. Several prospecting drives were put in, and the coal was discovered to be both deteriorated and thin. It is stated that there is yet a large area of coal unworked lying between the mine and the old Kamo Mines. To work the property profitably it should be opened up from the Kamo end, where the coal is some depth below the surface. The mine-workings were examined, and found to be in good order. Five hundred tons of coal was mined for the year. Two men were employed.

Hikurangi Coal Company (Limited) (W. R. Dunn, manager).—Mining operations have principally consisted of the extraction of pillar-coal in the eastern section. The pillar-coal on the western side of the Government railway, and underlying the limestone rocks, is now exhausted. To prevent the flooding of this section a strong dam has been made in the drive through the railway pillar. East of the railway pillar there is yet some good coal to be got, and it is here that operations are being conducted. The new area, west of the railway, referred to in last annual report, has been opened up well, and at least half the number of the company's men are employed here. It is estimated that there are approximately 60,000 tons of coal that can be extracted from the pillars. The company has also acquired what appears to be a valuable property south-west of the Hikurangi Township and close to the railway. Boreholes were put down to a depth of from 200 ft. to 500 ft., and a seam 10 ft. thick discovered. This is an important discovery, as it proves the coalfield to be more extensive than was at first supposed. I inspected the mine twice during the year, and found everything satisfactory. The company's output for the year was 61,071 tons of coal; and dividends amounted to £1,875 (including a bonus of £750). Seventy-four men were employed.

Northern Coal Company (Limited) (William Morgan, manager).—From the north side of the main adit level coal was won from bords in the solid, and also from pillars. To the south side of the main level the work was confined to extracting pillar-coal. Great care should be exercised in this undertaking, otherwise a large quantity of coal will be lost. Through a subsidence among the pillars, the air-shaft and airways were interrupted, and at the time of my visit the ventilation was poor. The manager is taking active measures to restore ventilation by opening up the airways. A new tunnel is being driven north of the present drive, and this will open up some coal to the dip of the present workings, as well as provide for drainage and the material improvement of ventilation. The prospects disclosed in this section are very encouraging. The output for the year reached 50,275 tons of coal, being an increase of 1,727 tons over the previous year. £3,000 was paid in dividends, and seventy-four men employed.

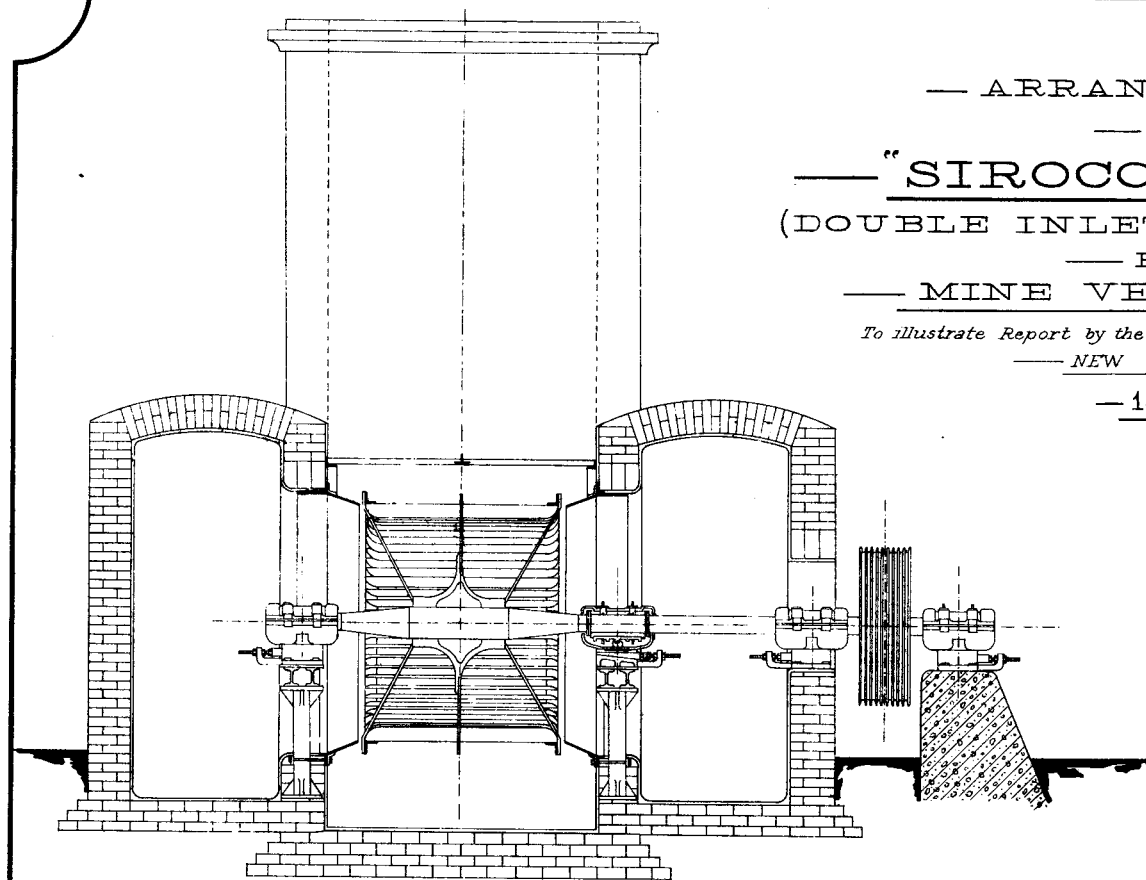
Kiripaka Mine (Northern Coal Company, owners; E. W. Tattley, mine-manager).—Operations have been confined to the sections north and south of the main dip haulage-way. The mine is just opening out, consequently no pillar-coal has yet been worked. The main dip has not been extended for the year, there being sufficient coal for present requirements. The coal is of a hard nature, and requires much blasting. In the workings north and south of the main dip the coal-seam has thinned considerably. This is characteristic of the northern coalfields. As previously stated, the property has been well prospected by surface boreholes. The output for the year was 34,579 tons of coal, being an increase of 2,000 tons over last year. In addition to this, 2,887 tons of fireclay was mined. Sixty-eight men were employed.

Taupiri Coal-mines (Limited), Ralph's Section (E. S. Wight, manager).—During the year the company purchased the Taupiri West Company's property, which adjoins their western area. A pair of headings was at once started from the main south-west dip haulage-road with a view to connecting with the Taupiri West shaft. Such a connection is highly desirable, as it will provide an outlet on the western side of the Waikato River for use in case of emergency. This connection cannot, however,

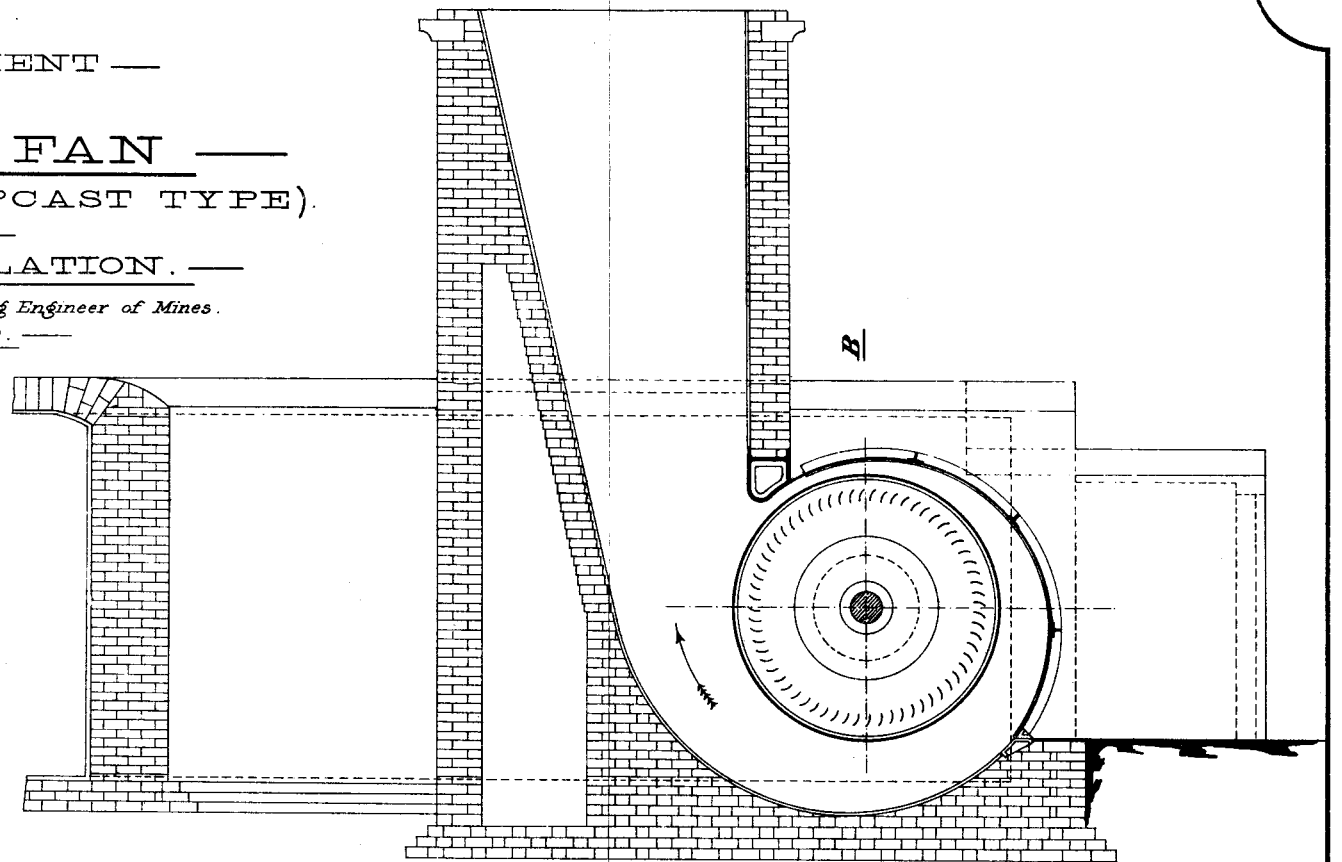
— ARRANGEMENT —
 — OF —
 — "SIROCCO" FAN —
 (DOUBLE INLET, UPCAST TYPE).
 — FOR —
 — MINE VENTILATION. —

To illustrate Report by the Inspecting Engineer of Mines.
 — NEW ZEALAND. —

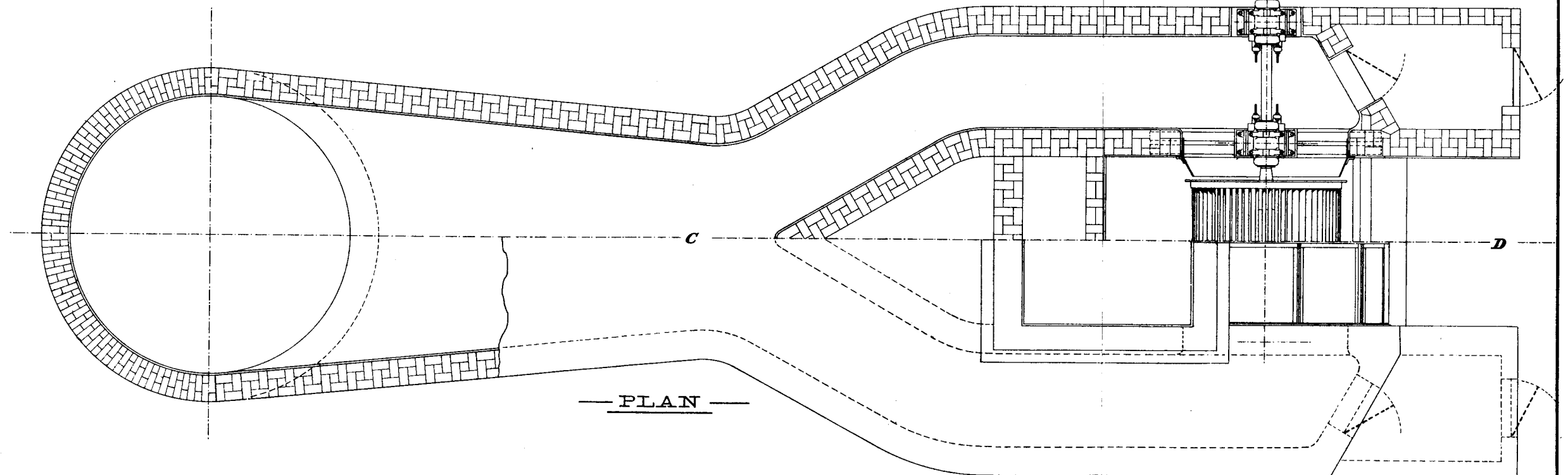
— 1909. —



— SECTION ON LINE A.B. —



— SECTION ON LINE C.D. —



— PLAN —

be effected for probably two years, owing to the distance that has to be driven, and to other causes consequent on the anticlinal formation of the floor of the coal-seam. A series of boreholes is being put down from the surface to ascertain the depth of the floor of the coal-seam so that headings can be driven to a uniform grade, as they will be used later on as haulage-roads. I have made several visits to the mine, and found the working-places in good order, and the mine ventilated. I examined the damaged pillar area in the old workings under the river, and believe no additional damage has resulted in the last year. Nothing has been done in the direction of strengthening these pillars. At the close of the year the manager reported that a creep had set in among the pillars in the No. 3 south-west section of the mine. The area is free from water overlying the coal, and steps were immediately taken to close off the area to prevent a mine-fire which might take place as the result of coal-crushing. The output for the year amounted to 91,771 tons of coal. One hundred and seventy-two men were employed.

The Extended section (William Wood, manager): Considerable improvements have taken place in this section. Electric light has been installed around the pit-bottom and along the haulage-way. The main haulage system has been extended in the west and north-west districts, which will give increased facilities for the coal-extraction. In the west heading a fault downthrow was met with, through which a stone drift is being driven to reach the displaced coal-seam. The drift will be 12 chains long. Some improvements are being made in the mine-drainage. This section has been examined from time to time, and found in good order. The output for the year was 77,462 tons of coal, and 173 men were employed.

Taupiri Reserve section (William Wood, manager): Owing to the difficulty in disposing of the coal mined, only a limited number of men are employed. The quality of coal is inferior to that of the coal obtained in the other sections of the company's property. The mine was inspected during the year, and found to be in good order. Twelve men were employed.

*Taupiri South (William Leather, manager).—*This is an old colliery with an eventful history. Coal was mined years ago, but owing to carelessness in leaving small coal in the mine, the pillars took fire and the mine had to be abandoned temporarily until it was thought that the fire had burnt itself out. About the beginning of the year the manager attempted to reopen the mine, and after spending a considerable amount of money had to relinquish operations, as the fire still burnt. Later a fresh entry was made, leaving the fire district to the left, and it is believed that a large quantity of coal will be won from the section. I examined the mine on several occasions, and found it in good order. The output for the year was 200 tons. From two to six men were employed.

*Taupiri West (R. McEwen, manager).—*Very little work has been done on this property. Early in the year negotiations were proceeding between the company and the Taupiri Company for the purchase of the property, which was effected about the middle of the year. It is the intention of the new owners to work the coal by driving a main haulage-tunnel from Ralph's section to the Taupiri West shaft. Ninety-one tons of coal was mined, and two men employed.

*Union Collieries Mine (F. J. Tattley, manager).—*The old section has been worked out, and the main dip driven a further distance of 250 ft., where new work is now being opened out. From this point a drive is being driven to connect with a shaft sunk by a former company. This shaft is lined with brickwork, and is in good order. When this connection is effected there should be an improvement in the ventilation, which has not been all that could be desired. Early in the year a serious accident occurred at the mine, resulting in the loss of two lives. The mine was inspected several times during the year, and everything with the exception of the ventilation appeared satisfactory. The output for the year totalled 14,876 tons, being an increase of 4,488 tons over the previous year. Twenty-seven men were employed.

*Ngaruawahia Colliery (J. Duncan, manager).—*This is a new property, situated about six miles west of Ngaruawahia on the road to Raglan. The coal-seam was found outcropping in a small stream, and an examination revealed that the seam was 11 ft. thick, and in appearance similar to the Taupiri coal. The coal is bright and hard. As there are no waters overlying, a mine, if developed, would be practically free from water, which will permit of the pillar-coal being extracted. The greatest drawback to this company is the lack of sufficient capital to undertake the construction of a railway from the mine to the Government line at Ngaruawahia. I inspected the mine early in the year. Only two men were employed for a few months.

*Drury Colliery (James Holden, manager).—*This mine is worked principally for the fireclay, which is utilised in the manufacture of bricks, pottery, &c. Extensive additions were made to the brick and pipe works, where some very fine fireclay goods are made. The coalfield is much faulted and broken. About half a mile from the works a borehole was put down 800 ft. to prove the existence of a coal-seam to the dip of the present workings, but the country passed through was mostly fireclay, and no trace of coal was found. Five hundred and eighty-nine tons of coal and 1,470 tons of fireclay were mined for the year. The mine was inspected on several occasions, and found to be in good order. Five men were employed.

*Mangapapa Mine (Mokau) (William Lennox, manager).—*The Mokau coalfield is but little faulted and very extensive. The rocks overlying the coal are sandstone and limestone, which is a great advantage, as but little timbering is required. The great obstacle which the company has had to contend with in the past is the uncertainty of communication with the outside world. The township is situated in an isolated locality, and the only means of transit for the coal is by way of the river. The boats used for conveying the coal are subject to frequent interruption owing to the shallowness of the river, and often the service is suspended owing to the periodical stormy weather. The output for the year was 5,989 tons. The mine was inspected during the year, and excepting the ventilation, everything gave complete satisfaction.

Accidents.

The following is a summary of fatal and non-fatal accidents during 1908 on the northern coalfields :—

	Fatal Accidents.		Non-fatal Accidents.	
	Number of Separate Fatal Accidents.	Number of Deaths.	Number of Separate Non-fatal Accidents.	Number of Persons injured, including those injured by Accidents which proved Fatal to their Companions.
Explosions of firedamp ...	...	...	...	...
Falls in mine ...	1	2	2	2
Shaft accidents ...	...	...	...	...
Miscellaneous—				
Underground ...	...	...	14	14
On surface ...	...	...	...	...
Totals ...	1	2	16	16

I have, &c.,
B. BENNIE,
Inspector of Mines.

Mr. ROBERT TENNENT, Inspector of Mines, Westport, to the UNDER-SECRETARY, Mines Department.

SIR,—

Inspector of Mines' Office, Westport, 20th March, 1909.

I have the honour, in compliance with section 78 of "The Coal-mines Act, 1908," to report as follows on the West Coast coal-mines for the year ended 31st December, 1908 :—

Golden Bay Coal-mine, Motupipi.—Nothing further has been done on this property.

Pakawau Coal-mine (owner, E. G. Pilcher, of Wellington ; P. McCaffrey, mine-manager).—(24/10/08) : With the exception of driving a dip heading 140 ft. in the 3 ft. seam, for a yield of 480 tons of coal for the year, all other mining operations have been suspended.

Puponga Colliery (owners, Puponga Coal and Gold Mining Company (Limited), (British) ; C. Y. Fell, Nelson, attorney ; A. H. Taylor, mine-manager).—(24/10/08) : This company suspended mining operations on the 31st March last, for the purpose of installing Ingersoll coal-cutting and air-compressing machinery. To erect this plant in a central position, and under the same roof with the haulage and boiler installations, a favourable site was of importance, as considerable excavation was necessary. This preparatory work was completed in September, and the plant erected and in operation when visited in October, the whole installation being satisfactory, while the percentage of round coal won showed a large increase as compared with hand-labour formerly employed. When using the Ingersoll coal-cutter, particularly in workings of medium height, any difficulty relative to angle of inclination is simply removed by setting the column at an angle favourable to the pitch of the seam ; whilst the average duty per minute is stated to be 250 blows of 300 lb. by 9 in. stroke, under a working air-pressure of 70 lb. per square inch. In order to intersect and exhaust a rise section of the lease, and extend the use of coal-cutting machines, 7 chains of self-acting surface incline was constructed in direct connection with the screening plant, on gradients varying from 1 in 5 to 1 in 3. Connecting with the incline, a main crosscut level is being driven and timbered, 10 ft. by 7 ft. in the clear. This level has touched the outcrop. Whilst these developments were in progress, extensive repairs were effected throughout the dip working ; also a change-room and baths have been provided for the convenience of the workmen.

Westport-Stockton Colliery (owners, Westport-Stockton Coal Company (Limited) ; George H. Broome, general mining-manager).—(6/12/08) : This colliery was officially opened on the 6th October last, and, with the exception of some two weeks' stoppage to complete the laying-down of the third (brake) rail on the electrical haulage-line, mining operations have since been carried out by double shift without further hitch. In opening the colliery, mining was commenced east and west off B tunnel (under the ordinary bord-and-pillar system) with electrically driven coal-cutting machines and hand-labour equally employed. The main ventilation is induced by a motor-driven fan, 7 ft. in diameter, of the improved Waddle type, and the narrow-heading work by auxiliary motor-driven fans exhausting through 12-in.-diameter pipe-lines, the whole ventilating system being of a high standard.

Electrical installation : The power-house consists of a ferro-concrete construction, in length 174 ft., width 50 ft., and height 25 ft., divided into three compartments—engine-room, condenser-room, and boiler-room. The two main generator sets are British-Thompson-Houston three-phase generators, 300 kilowatts, 6,600 volts, direct-connected, and on a common bedplate with a 475 brake horse-power Belliss and Morcom triple-expansion condensing-engine ; whilst the exciting-current for the fields is supplied by two exciter sets, each consisting of a British-Thompson-Houston 14-kilowatt 88-volt

generator, direct-connected with a Belliss and Morcom simple condensing-engine, the set running at 600 revolutions per minute. A motor-generator set is installed in the power-house, to light the general plant and operate a number of direct-current motors about the storage-bins. This set consists of a 100-kilowatt, direct-current, 280-volt, flat compound generator, direct-connected to a British-Thompson-Houston three-phase, 6,600-volt, 150-horse-power motor, running at 705 revolutions per minute. The main switchboard has eight panels and three blank panels for further extension. The direct-current voltmeter for the motor-generator set is mounted on the extreme left panel; the synchronising indicator and exciting voltmeter, together with Tirrell regulator, on the extreme right panel. Added to these there are two small auxiliary panels, one for the control of a 40-kilowatt, 6,600-volt primary, 230-volt secondary transformer, and the second panel for the control of a 75-kilowatt, 6,600-volt primary, 230-volt secondary transformer. The switchboard is adequately fenced off. Sub-stations: Direct current is supplied from three sub-stations to run the locomotives and mine machinery, including coal-cutters and ventilating-fans. The trolly-wire in use is General Electric Company's grooved No. 0000 throughout, and in parallel therewith is a stranded cable of 600,000 mils. This wire is bare outside the mine, but covered inside, while the feeder-cable is tied to the trolly about every 150 ft., and the height of trolly-wire above tram-rail is 7 ft. 8 in. Over a total length of five miles transmission-line there are nine transpositions.

Millerton Colliery (owners, Westport Coal Company (Limited); William Dunn, local manager).—(3/12/08): Throughout the varied developments of this extensive colliery, efficiency is maintained in accordance with the rapidly increasing demands, whilst safety to life and property receive careful attention. Including engine-coal, the gross tonnage raised was 322,631 tons, being the largest yet recorded, an increase of 19,517 tons 19 cwt. on the preceding year.

Mine Creek and Mangatini sections: Outside the ordinary and general routine of solid and pillar operations, developments have been unimportant, attention having been directed to complete the more important works in connection with the Mangatini section of the lease. These extensive works are now completed, and, notwithstanding the large expenditure incurred to develop and equip this property with modern and economic labour-saving appliances in haulage, coal-cutting machinery, &c., the field so far developed affords exceptional promise in thickness, hardness, and quality of seam, while the natural stratigraphical features of the field furnish factors favourable to the general working-conditions of the mine. With regard to additional mechanical power, provision has been made at the central power-station, situated at Mine Creek, where two Babcock boilers are being erected, together with a powerful dynamo for lighting purposes, which will eventually supply a motor-driven Sirocco fan, calculated to maintain a ventilating-capacity of 150,000 cub. ft. of air per minute, at a 3 in. water gauge. Meantime, Mangatini section is temporarily ventilated by an induced-draft Sirocco fan, driven by direct-coupled engine, actuated by compressed air.

New Tunnel district: With the object of effecting the safety and extended operations of the coal-field, mining was suspended (in the above-named district) and a contract let in June last to continue the main rock tunnel a further distance of 50 chains, on a rising gradient of 1 in 10, to connect with the Mine Creek working, and finally abolish the heavy graded road (1 in 3) known as Mine Creek Jig. Driving is continuous (three shifts) from both ends (Sundays excepted), with very satisfactory progress, while the stratum is a hard, compact, grey granite. Contract time to complete is eighteen months, but, according to the average rate of driving, a holing is not expected to exceed sixteen months. This route, when completed, will form the main entrance to the mine, both as a haulage and travelling road. In this driving, water and ventilation are amply provided.

A fatal accident occurred to John Moloney (miner) by fall of stone in the No. 14 district of pillars.

Prosecutions under the Coal-mines Act: W. Arthur—Charge, false entry in report-book; fined £2. W. Arthur (same person)—Riding on truck; fined £1. W. Arthur (same person)—Charge of drunkenness; withdrawn. C. Moyle—Two charges—drunkenness in mine, fined £1; riding in truck, fined £1. V. Curran—Two charges—drunkenness in mine, fined £1; riding in truck, fined £1. H. Smith—Three charges—riding in truck, fined 10s.; trespass in mine, fined 10s.; drunkenness in mine, withdrawn. D. Hill—Three charges—riding in truck, fined 10s.; trespass in mine, fined 10s.; drunkenness, withdrawn. Five boys were convicted and discharged for throwing stones in sheds.

Dennistown Collieries (owners, Westport Coal Company (Limited); J. Brown, local manager).—(9/12/08): Notwithstanding that mining operations were exclusively confined to single-shifting over the whole system, the gross tonnage lowered down the inclines for shipment, 294,760 tons, was the highest yet recorded for any similar period on single shift. The general developments continue to be kept well in advance of the growing requirements. In the earlier history of this property extensive areas were left standing on pillars, which, for various reasons were only partly extracted. This condition has happily given place to more modern practice, and a more exhaustive and proportionate extraction is now being effected.

Coalbrookdale Mine: The sections of the Cascade areas have developed beyond anticipations, while the thickness and quality of the seam are practically unequalled. The output is chiefly produced by coal-cutting machines. Regarding the ordinary working-conditions, there is little of importance to note. Munsie's section: All solid working to the dip has been exhausted to a given point, from which the management intends to forewin the remaining portion from the upper levels of Cascade dip section: this system will provide free drainage, and a more direct ventilation and haulage. East Cascade pillars still stand intact, extraction awaiting completion of the winning-roads now pushed from the main haulage. The main drive (stone) now being driven, 10 ft. by 7 ft. in the clear, to exploit the Waratea portion of the lease, has made satisfactory progress, and is calculated to connect with the workings on the right-hand side of Cascade during the current year. On completion of this drive, endless-rope haulage will be installed to win the right-hand coal, while the remaining portion of the drive will be completed to its terminal point in the lease.

Ironbridge Mine (8/12/08): Much of the work done in this mine has been of the ordinary routine character, pillar-extraction showing a high percentage of the coal won. In the districts where solid work is extended the quality of seam has been maintained, notwithstanding that local stratigraphical troubles, which cause varying grades and thickness of seam, tend much to detract from uniform working. As an instance of these irregularities, the seam in the Dundee dip is divided over a considerable area by intervening strata, therefore, the lower portion has been intersected by a stone drive, and the working-places thus won have proved coal of good quality, which, so far as can be ascertained, will extend over several acres. **Kiwi section:** The whole area of solid working having become exhausted to the outcrop, the output is wholly maintained from the extraction of pillars, the natural conditions of the field being favourable for total exhaustion with a minimum of risk. **Old Shaft section:** Work in this old district is being carried on with the expectation of winning a fairly large area of virgin ground in which the seam is expected to continue and maintain coal of good marketable thickness and quality. **Deep Creek:** In connection with the development of this area, the preparatory work has been steadily pushed forward. As mentioned in my report of last year, the $5\frac{3}{4}$ chains of rock tunnel has been completed, and the Deep Creek bridged with a substantial steel-girder structure. Connecting with the bridge there are some 5 chains of surface-clearing and slight grading to do to meet the outcrop, when it is fully anticipated coal will be produced during the year. To further facilitate and increase the ventilation at the Ironbridge Mine, it is proposed to erect a duplicate Schiele fan to that now doing duty. With this additional ventilating-capacity, a high working-margin should be available.

Including the blasting operations at both mines, 56,655 shots were fired during the year, with an average yield of 5.43 tons per shot. Miss-shots were 0.3 per cent. of the total. It is pleasing to report absolute freedom from fatal accident at the Denniston Mines. There were no prosecutions. The company has erected a commodious and up-to-date boardinghouse situate between Denniston and Burnett's Face, affording suitable accommodation to between forty-five and fifty boarders. The establishment is lighted by electricity, while hot and cold baths and clothes-drying room are provided.

White Cliffs Coal-mine, Buller Road (Job Lines, lessee).—(24/9/08): There is practically nothing of importance to report in connection with the operations at this property, the output being chiefly confined to the requirements of the Old Diggings and New Buller Junction dredges. The seam maintains its former thickness and quality, and timbering is made a special feature. Ventilation is well maintained by second outlet.

Flaxbush Coal-mine, Three-channel Flat (S. De Filippi, owner).—(23/9/08): A miner and youth continue to find coal for the Mokoia dredge on the Buller River, the coal being only suitable for steaming purposes. Ventilation is good, and timber is freely used to secure the stoped ground, as the seam is practically vertical.

Burke's Creek Coal-mine (owners, Cairns and McLiver).—(21/12/08): With reference to the operations of this mine, they are a mystery, particularly as to the conditions under which the owners find a living, it being difficult to find any person at the mine when it is visited for the purpose of inspection. The property bears an appearance of neglect. During the late heavy rainfalls the tram-line suffered considerable damage.

Lockington's Leasehold, Burke's Creek, Reefton (Elisha Lockington, owner).—(21/12/08): Attention has been directed to win a lower section of dip coal on the outcrop of west level, by cutting a deep surface drainage. The coal is of good quality, and more free of pyrites than usual in a mine. Two men were employed.

Archer's Freehold, Caplestone (F. W. Archer, owner).—(21/12/08): Coal continues to be taken from the top seam on the No. 3 low-level tunnel. The rock-driving mentioned in previous report has intersected the seam at a driven distance of 120 ft., and, although not yet bottomed, to its full thickness, the coal is hard and bright. Other works in connection with the mine are in fair order.

Coghlan's Freehold, Caplestone (J. Coghlan, owner).—(21/12/08): This party continues to take coal from their low-level mine situate on the north bank of the Boatman's Creek. The round coal is very suitable for household purposes, and the small for dredging. Connection for a second outlet and ventilation has been provided.

Waitahu Coal-mine, Reefton (J. O'Donnell, owner).—(21/12/08): During the year mining has been exclusively confined to the 6 ft. seam in No. 2 tunnel, the main level having struck the fault-line on which the No. 1 drive has been standing for some time. In connection with cutting the fault, the difficulty with these small holders is scarcity of funds, notwithstanding the main coalfield may be easily obtained, and may yield profitable returns for many years. The damage to the aerial line across the Waitahu River has been repaired, and the mine is in full work.

Reefton Coal Company (J. Billett, owner).—(23/12/08): This property having changed ownership during the year, the output was, in consequence, considerably reduced, the supply being chiefly for steaming purposes in connection with the electric-light plant. Also, the main low level was cut off by downthrow faulting of formidable dimensions. During the heavy rainfalls recently experienced throughout the Reefton district, portions of the Nos. 1 and 2 tunnels have collapsed, the repairs of which will incur considerable expenditure. Repairs are being effected.

Town Belt Coal-mine (Morris and Leishman, owners).—Work at this mine has been suspended during the greater part of the year.

Murray Creek Coal-mine (Morris and party, owners).—This party have abandoned their lease.

Golden Treasure Coal-mine, Murray Creek (J. Billett, owner).—(22/12/08): Open face. This property being practically exhausted riseward, the output is chiefly confined to the requirements of the winding and air-compressor plants on the Energetic Mine.

Phoenix Coal-mine (John Knight and Co., owners).—(22/12/08): Referring to the fire on this property, the water-supply formerly laid on from the upper reaches of the Victoria Creek is still in flow, but the supply is dependent on rainfall. However, the recent heavy rainfalls have cooled down

the whole property, smoke being visible at only one or two points. The Knight's party have recently opened out a section of superior household coal on the Venus lease, the small coal being now used at the Golden Fleece battery.

Lankey's Creek Coal-mine (owners, Watson and Pascoe).—(22/12/08): The development of this property continues to improve, and the construction of better roadways has received much attention, whilst an old abandoned pillar area has been recently opened, where it is expected to locate much solid coal. Ventilation and timbering are special features throughout the working, and the small coal for steaming purposes is in good demand.

Progress Coal-mine, Reelfton.—The quality of the coal having become worthless through faulting, operations are in the meantime abandoned.

Loughnan's Coal-mine (J. Billett, owner).—(21/12/08): As mentioned in previous report, this mine was shut down since change of ownership; but on suspension of operations at the Progress Coal-mine, operations were resumed to meet requirements at the Globe Mine. The quality of the coal is superior for steaming purposes to that formerly supplied. The working is in good order, and new iron tram-lines have been laid throughout. The first timber is standing, and in good order.

Blackball Colliery (owners, Blackball Coal Company (Limited); Walter Leitch, mining manager).—(18/12/08): Notwithstanding the loss in output in consequence of a prolonged strike, which extended over a period of eleven weeks, the gross tonnage—85,348 tons, for nine months only—shows a decrease of only 7,670 tons as against the previous year. Thus, according to the rate of production per week worked, a substantial increase is maintained, this being dependent on the ten-hour system of haulage mutually arranged between employer and worker. Fresh development is important, the total drivage on the winning levels being only 5 chains. This reduction of driving will not affect future output, and may be chiefly attributed to the extraordinary repairs effected towards the extension of the endless-rope haulage-line a further 35 chains, making the operative haulage system 90 chains in length from point of terminal to delivery at aerial tram-line. In referring to the new works under construction, and in connection with the Ngahere-Blackball Railway system, it is notable that, since the levels for sidings and site for storage-bins have been determined, the various works connected therewith are being actively pushed, and the time of completion is anticipated to be about that of the Government works. The computed capacity of the bins is 2,500 tons; the sorting and handling equipment will comprise the latest devices in tipplers, screens, and conveyors. The panel system of working continues to be a success in the dip section of the mine, particularly as heating in any district can be separately and promptly dealt with at a minimum of risk to the men engaged, and also at a much-reduced expenditure. Ventilation and timbering are attended to satisfactorily.

Paparoa Coal-mining Company (Limited) (J. T. Watson, mine-manager).—(17/12/08): The various works of development continue to be vigorously pushed, including railway-construction, rock-tunnelling, and coal-development. The lower incline tunnel has been completed at a total length of 20 chains, whilst the construction of the viaduct to connect with the Cliff Flat at the entrance of No. 2 tunnel is well advanced. In driving No. 2 tunnel the mine-manager has spared no effort to push the work ahead, with the expectation that a holding would be effected about the end of January, 1909; but, as driving from the Soldiers' Creek side of the range was compulsorily suspended owing to an inflow of water in the face, the burden of work is being done by rock-drills from the lower end, and on the 16th February, 1909, a holing was estimated at 200 ft. For the main ventilation scheme, a steam-driven single-inlet Sirocco fan, 105 in. diameter, with a computed capacity of 110,000 cub. ft. per minute, has been delivered, and the foundations and other preparatory works await its installation. The archway forming the entrance to the main return airway tunnel is a spacious and substantial structure, built of dressed red-pine blocks, rested on and covered with reinforced concrete. Also steel girders will take the place of timber to secure the main return airway to a finished sectional area of 10 ft. by 8 ft. Meantime, operations are ventilated by three separately installed Sirocco fans, with capacities varying from 3,000 cub. ft. to 7,000 cub. ft. per minute. Reports and other provisions of the Act are strictly enforced.

North Brunner Coal Company (Limited) (Arthur P. Harper, attorney, Greymouth).—Since Thornton's lease was taken over by this company, active prospecting has been carried out by a series of short drives, which aggregate to a total length of 450 ft., together with other important surface works, by which several outcrops have been exposed. On the hypothesis that these preliminary prospecting-works afford sufficient information to determine accurate data relative to the extent of the coal-bearing area and natural position of the 16 ft. seam, the management has commenced a rock tunnel (10 ft. by 6 ft. 6 in. in the clear) to intersect the seam at estimated distance of 375 ft., and at a point 400 ft. above sea-level. Including the bridge across the River Grey, the line of endless-rope haulage, calculated to connect the mine with the loading-station to be erected at Stillwater Junction, will be 67 chains in length on a gradient of 1 in 12 in favour of the load. At time of writing, tenders were called to bridge the River Grey, but so far nothing further has been done. Houses are being erected for the mine-manager and other officials in the township of Stillwater. Mr. Robert Wragg, late of New South Wales, has been appointed mine-manager.

Brunner Mine (owners, Point Elizabeth Railway and Coal Company (Limited); James Armstrong, mine-manager).—(17/12/08): With regard to the faulted character of the St. Kilda section of the lease, change in the geological conditions exposed was not important during the early months of the year—the only condition favourable to further prospecting was that sufficient width of coal was still available to push forward the winning-headings; when finally the pitch, thickness, and quality of the seam suddenly changed, with much improved working-conditions, especially in hardness of roof. Consequently, promise of future development has been more assured, and construction of storage-bins, screens, and other surface plant more actively pushed. Ventilation has also been much assisted by the installation of a Sirocco fan driven by water-power, and the output has considerably increased. Double-

shifting is the system of operations, affording employment to forty underground and ten surface hands. Engine haulage on the surface incline has taken the place of horse as formerly employed. Two prospecting-drives are being driven from the river-bank, with a view of making a probable connection with the present working-area; but the coal is soft throughout the whole drivings, and heavy timbering is required.

Tyneside Proprietary Company (R. Alison, mining manager).—(8/5/08): Mining operations were successfully carried out on this property until the mine was flooded on the 8th May last. Output, 40,304 tons. In relation to the flooding of the Tyneside Coal-mine, past experience has proved that in all cases of pillar-extraction in dip workings, similar difficulties have invariably arisen, particularly where the strata overlying the pillared areas are broken, and free drainage unobtainable. These facts directly affect the economy of pillar-extraction throughout the West Coast coalfields. Prior to flooding, the water had been controlled for over twelve months by direct double-acting plunger sets, each 12 in. diameter by 3 ft. stroke, permanently installed on line of main dip haulage-road, where considerable storage-capacity was under control should emergency occur; but prior to the excessive rainfall on the 5th May last, danger of flooding was not anticipated. To meet this emergency, however, a special double-acting Tangye pump, fitted with rams 8 in. in diameter by 3 ft. stroke, was added, and worked in conjunction with the main pump, while mining operations were also suspended to apply the whole boiler-power available. With this additional pumping plant, complete control of the water was speedily maintained, and, on visiting the mine at 11 a.m. of the 8th May, the severity of the storm was apparently over, and the pumps were making satisfactory progress towards reducing the water. Unfortunately, however, on the evening of same date a terrific thunderstorm, accompanied by excessive rainfall, swept the whole West Coast areas, and speedily raised the rivers to high flood. At this juncture the unprecedented inflow of surface water through the broken strata, together with the inrush of flood-water from the River Grey, forced a passage through an old coal-drive formerly worked by the late Mr. Kilgour. It was then evident that no available means were possible to save the mine from flooding, notwithstanding the present company had previously protected the drive by an efficient log dam; but, as the site on which the dam had to be built was a fireclay floor with coal sides, crushing by “creep” from the adjoining pillared ground was unavoidable. I am satisfied the management spared neither time nor expense to save the situation, and the company certainly suffered a loss, as the few remaining months’ work would have been profitable. The mine was estimated to last about six to eight months longer.

COAL-MINERS’ ACCIDENT RELIEF FUND, ADMINISTERED UNDER THE COAL-MINES ACT.

Where the funds are managed under medical associations, the following table shows the contributions paid by the various coal companies, the balances credited at the Post-Office Savings-Bank, the amounts expended on accident allowance, and the increase or decrease on fund for the year 1908:—

Colliery.	Contributions and Interest.	Balance in Savings-Bank.	Accident Allowance.	Increase.	Decrease.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Denniston ...	888 0 0	5,410 15 4	709 11 8	178 8 4	...
Millerton ...	732 1 9	2,048 14 4	788 6 4	...	56 4 7
Blackball ...	193 16 10	1,047 18 4	112 1 11	81 14 11	...
Brunner ...	180 6 10	1,105 4 10	77 14 2	102 12 8	...
Point Elizabeth ...	491 18 3	247 4 8	441 11 10	50 6 5	...
Totals ...	2,486 3 8	9,859 17 6	2,129 5 11	356 17 9*	...

* Net increase.

ACCIDENTS.

Of the number of accidents reported as coming within the meaning of section 62 of “The Coal-mines Act, 1908,” three were fatal and six non-fatal. Of the persons killed, two were underground at the working-face, and the other, a surface hand, fell a distance of 27 ft. over the Blackball Coal Company’s storage-bins.

FATAL.

Point Elizabeth Colliery.—(4/6/08): Robert Lumsden, miner, killed by fall of stone in the face, caused by collapse of timber.

Millerton Colliery.—(24/9/08): John Moloney, miner, was killed by fall of rock from edge of goaf.

Blackball Colliery.—(15/10/08): Ernest Rouse, surface hand, killed by falling over storage-bins.

NON-FATAL.

Cascade Mine, Denniston.—(8/1/08): John Cook, miner, sustained compound dislocation of the right foot by fall of head coal in face.

Tyneside Colliery.—(9/1/08): Daniel Ganey, miner, sustained fracture of left leg by fall of stone in the face.

Millerton Colliery.—(4/6/08): Richard Arbuckle, miner, sustained injury to legs and lower jaw-bone, and Patrick O’Neill, miner, scalp-wounds and contusions of pelvis, by fall of coal in their working-face.

Coalbrookdale Mine, Denniston.—(24/8/08) : John Walker, miner, sustained broken rib and injury to the lower section of back by fall of roof-coal while preparing to set prop.

Seddonville Colliery.—(28/8/08) : Guy Fleming, while repairing rope-road, sustained severe crushing of right hand, three fingers being amputated, through having it carried round curve wheel while the rope was in motion.

SUMMARY OF FATAL AND NON-FATAL ACCIDENTS CLASSIFIED, AND CAUSE.

	Fatal Accidents.		Non-fatal Accidents.	
	Number of Separate Fatal Accidents.	Number of Deaths.	Number of Separate Non-fatal Accidents.	Number of Persons injured.
Explosions of firedamp	...	...	...	...
Falls in mine	2	2	4	5
Shaft accidents	...	...	...	...
Miscellaneous—				
Underground	...	...	...	...
On surface	1	1	1	1
	3	3	5	6

GENERAL REMARKS.

As affecting the industrial interests dependent on the Grey Valley Coalfield, the more important features were the prolonged strike at Blackball and the flooding of the Tyneside Mine. With the increase of output produced from the Brunner and Point Elizabeth (State) Collieries, the shipments from the Port of Greymouth only show a decrease of 3,731 tons as compared with the previous year. Whilst quoting the returns from the Buller Coalfield, the Westport Coal Company shipped from the Port of Westport 613,218 tons, from Seddonville State Mine 55,231 tons, and from Westport-Stockton 3,267 tons. Thus an increase of 25,521 tons is shown in favour of Westport as against the previous year.

Mechanical ventilation is now generally installed. Included in the latest installations are a motor-driven improved Waddle fan at Westport-Stockton and a steam-driven Sirocco at the Seddonville State Colliery; whilst on the Paparoa coal lease and the Mangatini section of the Millerton Colliery two other Siroccos, with respective capacities of 110,000 cub. ft. and 150,000 cub. ft. per minute, are in course of erection. The Paparoa fan will be steam-driven, and that at Mangatini motor-driven.

Persons employed.

The total number of persons employed in and about mines under the Coal-mines Act was 2,044, a decrease of 114 on the previous year. Of these, 1,523 were employed below ground, and 521 above ground. Omitting number of persons employed in the development of new leases, the coal raised per person actually employed below ground was 724·339 tons, and per person employed above and below ground, 536·128 tons.

Accidents.

The death-rates from accidents per 1,000 persons employed during the year were—(a) below ground, 1·313; and (b) above ground, 1·919. Per 1,000,000 tons raised, the death-rate was 2·823, as against 4·752 in 1907 and 2·007 in 1906.

Foreign Trade.

Westport Coal Company.—The total tonnage shipped directly from Westport to ports outside the Dominion during the year 1908 was 42,958 tons, this being an increase of 4,511 tons as compared with 38,447 tons for the year 1907, and in comparison with the year 1906 an increase of 9,713 tons.

I have, &c.,

R. TENNENT,

Inspector of Mines.

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

SIR,—

Office of Inspector of Mines, Dunedin, 23rd March, 1909.

In accordance with the requirements of section 78 of "The Coal-mines Act, 1908" I have the honour to submit the following report on coal-mines in the Southern Mining District for the year ending 31st December, 1908.

CANTERBURY.

Springfield Colliery, Springfield (Christchurch Brick Company, owners; T. N. Horsley, secretary; James Taylor, permit, mine-manager).—(8/12/08) : After standing idle for some months, a start has

been made by repairing the upcast air-shaft, and now driving in fireclay towards the old main shaft, which is also used for pumping purposes. The coal-seam is practically worked out, there being only sufficient available for steaming requirements on the works. The fireclay is in demand for manufacturing purposes in Christchurch, where it is conveyed by rail. Two hundred and forty tons of fireclay was mined during the year.

Springfield Fireclay Mine, Springfield (Christchurch Gas, Coal, and Coke Company, owners: R. English, general manager; R. Peters, permit, mine-manager).—(8/12/08): Communication with old air-shaft is closed, and the new-shaft sinking to restore air-course should be prosecuted without delay, as pointed out to the person in charge. This mine is worked chiefly for production of fireclay underlying a 2 ft. seam of coal, which latter is worked as required for consumption on the premises only. Fireclay-seam, 5 ft. After production is railed to Christchurch for manufacturing purposes there. During the year 1,228 tons of fireclay was produced.

Craigieburn Coal-mine, West Coast Road (D. Manson).—Forty-five tons of coal was taken during the year for station-requirements.

Austin's Fireclay Mine, Sheffield (Charles Austin, owner; Edwin Smith, permit, in charge).—(8/12/08): Only fireclay now being got at this mine, the drives of which are well secured by timber, there being also an abundance on the ground ready for use as required. During the year 972 tons of fireclay was produced.

Homebush Colliery, Glentunnel (J. C. Campbell, mine-manager; Dean's trustees, owners).—(8/12/08): No. 1 Mine pillaring section: Air at intake, 6,000 cub. ft. per minute. Pillars are withdrawn successfully back to the "fault," a high percentage of coal, estimated at 95 per cent., having been won. Timber is kept close up to working-faces. Ventilation is good.

No. 1 Mine, dip section: Air at intake, 6,000 cub. ft. per minute. South side, three places going in solid. North side, No. 2 heading finished and stopped off. Coming back on pillars of No. 1 heading both sides. Some sweating visible in one place, which will soon be cut off and left behind in the waste. The return air-course, which is somewhat cramped in area owing to heaving bottom and fallen false roof, is to be restored by a new pillar stripway. Ventilation, fair.

Engine seam: Ventilation, 4,500 cub. ft. per minute. Levels driven to northern boundary, making in thinning and stony coal. Preparing to bring back the pillars. All places timbered to faces. Seam, 5 ft. 6 in.; air-shaft, 80 ft. (4 ft. 6 in. by 3 ft. 6 in.). Airways in good order. Engine-supply seam is on outcrop, worked intermittently for boiler and ventilating-furnace fuel. Manager's, underviewers', and deputies' report-books to date. Powder-magazine approved for storage; fifty cases (25 lb. each) of compressed blasting-powder stored (C. and H.).

Fireclay-pit: Clay only obtained for brick and tile and sanitary-ware factory purposes on the premises. Seam from 20 in. to 3 ft. in thickness. During the year 159 tons of fireclay was mined.

St. Helen's Colliery, Whitecliffs (Messrs. Levick and Thin, owners; W. Thin, permit, mine-manager).—(8/12/08): Since last visit the dip drive has been extended 2 chains in coal-seam, 6 ft. Low levels are driven north 5 chains to the fault, and pillars are now being brought back. The south level is 6 chains to the face, coal having thinned down to 4 ft. 6 in. Altogether this area of coal is creditably developed, and is being successfully worked where coal had been previously regarded as non-existent. Ventilation good; rules posted; copy of Act kept at mine; report-book to date. Air-shaft 80 ft. (4 ft. by 3 ft.).

Te Moana Coal-mine, Geraldine (Crowe Bros. and McDonald, lessees).—(18/4/08): A new mine intended to supply fuel for brickmaking purposes on the premises. A high level along the strike of coal proves the seam to extend westerly, intersected by minor faults consequently coal crushed, and somewhat inferior. The level drive is well timbered and safe—in fact, almost too much care has been taken, the result being over-expenditure in proportion to amount of work done and information gained. Advised Mr. Crowe to set away to dip, and prove deposit in that direction.

Mount Somers Coal Company, Mount Somers (George Neil, secretary, Staveley; A. Thompson, mine-manager).—(13/12/08): By amalgamation with the Woolshed Creek Coal-mines Company, as holders of adjoining lease, headings are now being driven through the boundary into Crown lands area. Seam, 20 ft. of coal. The fireclay underlying the coal-seam has been favourably reported upon. Ventilation good; rules posted; report-book kept; powder-magazine approved. The new tram-line, four miles in length, is practically completed to the jig incline on the southern bank of Chapman's Creek. The tramway is laid for locomotive haulage with rails 40 lb. to the yard, and connects with the Selwyn County Tramway to Mount Somers Railway-station, nine miles distant. A contract has been let for construction of jig incline $25\frac{1}{4}$ chains in length, grade 1 in $3\frac{1}{2}$.

Woolshed Creek Colliery, Mount Somers (W. Pickles, secretary, Ashburton).—(13/12/08): Now under new ownership, lease having been taken over by the Mount Somers Coal Company, and shareholders absorbed by that company. Not much work doing here now. A drive was being timbered preparatory to prospecting towards old worked ground. A small drive lower down the creek is in on the outcrop of coal, and further prospecting is necessary to prove continuance of the seam in direction of dip.

Albury Coal-mine, Albury (C. E. Riddle, owner; Gavin C. Kidd, permit, manager).—(17/7/08): The mine has been taken over from Mr. G. H. Willetts by Mr. C. E. Riddle as from the 1st instant. Repairs to mine-mouth required, and to be made safe overhead where timbers rotted. Copy of general and special rules to be posted. Daily examination with safety-lamp, and report to be entered in report-book immediately after examination. Air-shaft to be repaired from damage during recent flood rains, and ladder to be placed in position.

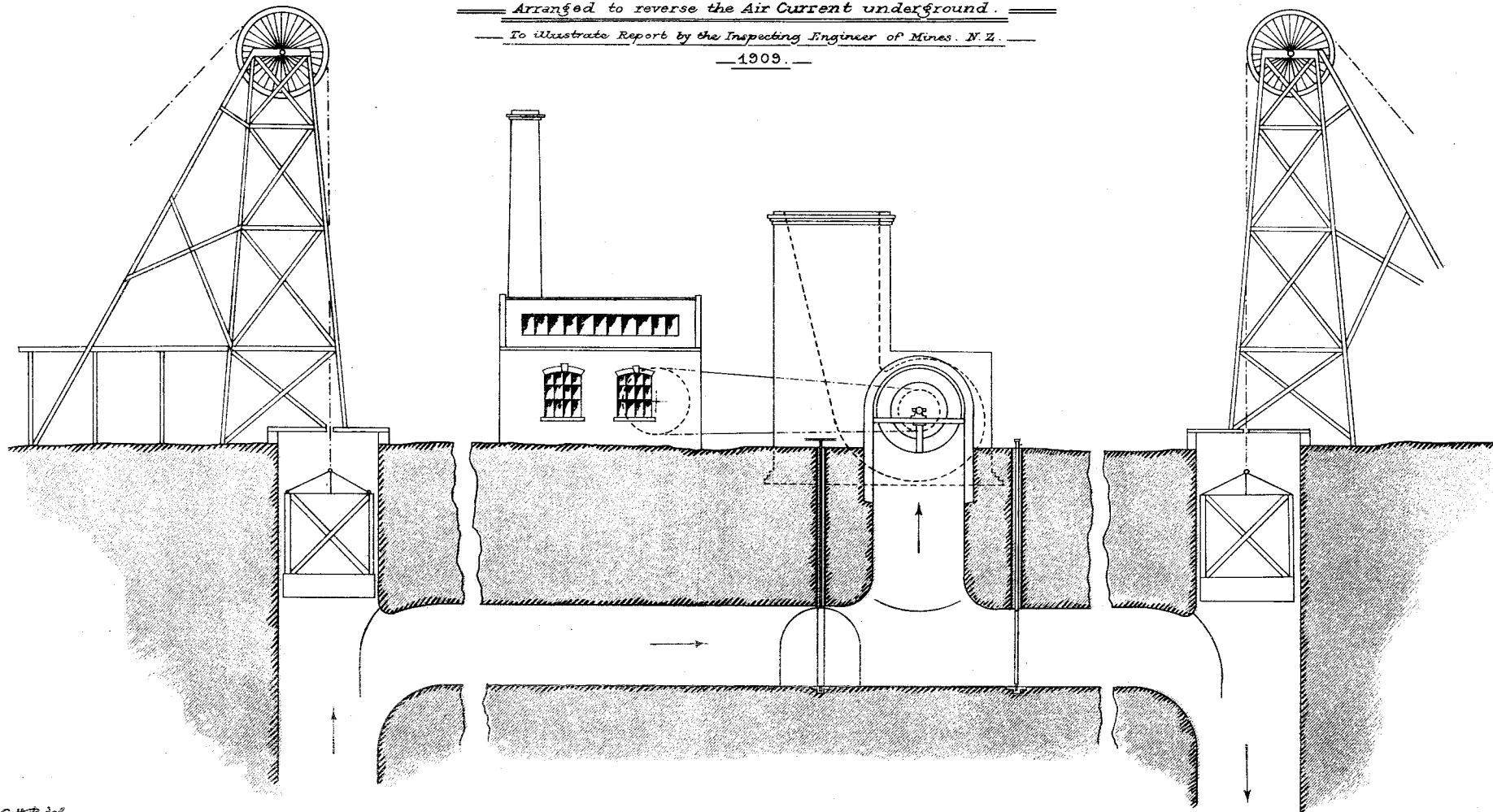
Waihao Forks Coal Syndicate, Waihao Forks (George Lomas, permit, manager).—(16/7/08): South Branch pit flooded by recent rains and floods. North Branch: Prospecting-drive fallen in at mouth by slip from hillside. A second drive to the rise is in to the coal, where it is the height of the place

— SIROCCO FAN. —

Arranged to reverse the Air Current underground.

To illustrate Report by the Inspecting Engineer of Mines. N.Z.

— 1909. —



C.H. del.

near McPherson's old drive. A prospecting-shaft sunk near-by, but to the dip, is said to have proved coal 18 ft. in depth. Being near the river, is liable to heavy drainage. Prospecting-shaft down 200 ft. Bore down to 460 ft.: at 44 ft. running sand and water carrying 2 ft. and 5 ft. seams of brown coal were met with; at 460 ft. struck hard quartz sandstone—chisel only made 1 in. per half-shift; work suspended pending arranging for Government diamond-drill.

Waihao Coal-mine, Waihao Forks (Stoney Creek Coal Company, Waimate, owners).—(16/7/08): Prospecting-drive on face of river-terrace had fallen in during recent floods; new drive going in from solid side of hill.

Elephant Hill Coal-mine, Waihao Downs (Edward Richards, owner).—(10/12/08): Private pit; output utilised for station purposes and requirements of the district. Pit in good order, having recently been restored in a substantial manner. Seam, 14 ft.; dip, 1 in 6 easterly.

NORTH OTAGO.

Dalgety Coal-pit, Hakataramea (New Zealand and Australian Land Company, owners; J. Drysdale, manager).—One hundred and eighty-three tons of coal produced for station use during the year.

Wharekuri Colliery, Wharekuri (Andrew Shanks, lessee).—(11/12/08): Vertical seam 40 ft. in width at widest parts. Strike of seam, north-and-south. Mine driven 250 yards in the sandstone formation to south of old worked ground. Drive in good order; ventilation good; no rules posted.

Kurow Coal-mine, Kurow (J. Sanderson, owner).—(11/12/08): Vertical seam 10 ft. in width; strike north-and-south. A new drive near the roadside is on coal at the face. Return air-shaft and second outlet provided.

Otiake Coal-pit, Otiake (George Taylor, owner).—This mine has been reopened, and a small quantity of coal taken out for local use.

St. Andrew's Colliery, Papakaio (Thomas Nimmo, permit, owner and manager).—(11/12/08): Old mine discontinued after twenty-five years' working, during which period there had been no serious accidents. Pillars have been drawn to near the mine-mouth. Estimated over 75 per cent. of seam won. Seam, 7 ft. New mine begun at the commencement of the year is being well developed. Air-shaft and second outlet provided: Powder-magazine approved; but, as very little explosive is used, one barrel only of blasting-powder is kept on hand.

Prince Alfred Colliery, Papakaio (Mrs. J. E. Willetts, lessee; C. O. Willetts, permit, mine-manager).—(11/12/08): Area, 60 acres lease on Coal Reserve. Old mine closed down and abandoned after working forty years without serious accident. New mine opened, and being developed on good lines. Upcast airshaft and second outlet provided. Old rules posted; report-book kept.

Ngapara Colliery, Ngapara (William Nimmo, permit, owner and manager).—(15/7/08): Mine in good order, also ventilation excellent. Second outlet-shaft requires ladders, which are to be put in, and Nimmo is to write me when done. There is, however, another second outlet and travelling-way which is known to the men. New copies of the general and special rules require to be posted. Magazine approved, and fifteen kegs (25 lb. each) stored. Proper canisters to be provided for carrying powder into the workings.

Shag Point Colliery, Shag Point (William Hunt, permit).—(9/10/08): A small mine in the upper seam facing the sea. Having worked up to the fault, pillars are now being drawn outward.

Allandale Colliery, Shag Point (W. Everest, secretary; A. McIntosh, managing director in charge).—(29/10/08): During the earlier part of the year work was continued in the main dip and north side, or Siberia workings. Nos. 1 and 2 seams having "come together" in the dip workings north, a thickness of up to 12 ft. was exhibited in coal of excellent quality. Some heating in a portion of the worked ground on the old north side of main dip was observed in the month of July, and driven on to locate the spot for the purpose of cooling it down. Early in October the incipient fire having become more pronounced, the owners decided to draw the electric pump and plant, and close that section of the mine, to allow of generation of gases and water rising to flood the heated part. When this was done, attention was paid to the new dip in main seam south, where work is being conducted by a reduced number of workmen.

SOUTH OTAGO.

Fernhill Colliery, Abbotsford (James Gray, owner and manager).—(29/12/08): Ventilation, 5,250 cub. ft. per minute in return airway. Only small output of coal being obtained, principally from pillars and head coal. The sand-deposit on the property is extensively worked for supply to Dunedin and district for building and other purposes.

Freeman's Colliery, Abbotsford (Freeman's Coal Company; R. Green, general manager; A. S. Gillanders, mine-manager).—(29/12/08): Air at intake, 12,500 cub. ft. per minute. Travelling around the breast of working-faces off No. 5 dip, these were found in safe working-order; the roof, however, was inclined to cut up in the vicinity of thread faults which occur, consequently advancing places are driven narrow and timbered where necessary. Owing to the infrequency with which stentons were put through for air, ventilation at several working-faces was found inadequate. Pillar-extraction of sections at each side near bottom of No. 4 dip nearly completed. Generally, the mine is in good order, an adequate supply of timber being kept on hand and used as required. New rules posted; report-books and plan to date. The mine-manager was subsequently prosecuted for inadequate ventilation, as disclosed on my visit on the 29th December, 1908, when a penalty of £5, with costs £2 9s., was imposed by the Stipendiary Magistrate.

Green Island Minerals Company, Green Island (J. Louden, managing director; T. Barclay, jun., mine-manager).—(26/5/08): Driving to dip in solid coal. Water is drained away from old workings to rise. Rules posted, and requirements of the Act are observed.

Jubilee Colliery, Saddle Hill (Jubilee Coal Company, owners; A. P. Bremner, general manager; Thomas Barclay, mine-manager).—(30/12/08): Furnace ventilation efficient, there being 12,500 cub. ft. of air per minute at intake. Circulation of air good, and being well conducted by brattice around the working-faces. Pillar and head coal-extraction is continued homeward and up to the boundary of adjoining property, being worked as Saddle Hill No. 2 Colliery. In dip workings to south-east, coal-seam faulted and coal not of best quality. New rules posted and requirements of the Act generally well observed.

Burnwell Colliery, Saddle Hill (Adam Harris, owner and manager).—(30/12/08): New airway and second-outlet travelling-way completed. Ventilation good. Continuing robbing and extraction of pillars and head coal in dip section. The new drive for outlet has exposed a second seam of coal, which will be held in view for future working. The water-level is proved by the drive to the dip, and there is less standing water than might have been expected in the old workings. New rules posted; report-book to date.

Saddle Hill No. 1 Colliery, Saddle Hill (Christie Bros., owners; W. W. Ogilvie, mine-manager).—(30/12/08): Latter work consists of withdrawal of pillars in McIntyre's section, where the coal-seam is found to be 22 ft. in thickness, of which about 20 ft. is being won. The line of pillar break in roof is well maintained. Some improvement in ventilation agreed upon would result in decreased temperature at working-faces where it was found to be rather high—viz., 70° Fahr. The solid coal barrier between this and the adjoining property remains untouched as heretofore. Percolation of drainage-water continues through the joints of the seam forming the barrier. The slight flow varies according to weather conditions. No better safeguard could be contemplated—viz., a solid barrier of coal with percolation in numerous places along its length, thereby insuring a minimum of standing or accumulated water on the other side. Rules posted, and report-books to date.

Saddle Hill No. 2 Colliery, Saddle Hill (Christie Bros., owners; Robert Hill, mine-manager).—(30/12/08): As is occasional in bord-and-pillar workings, several of the leading places are past the airway; consequently air dull and stale at these working-faces. Fan ventilation is being substituted for furnace in use. The old workings to rise, having exhibited signs of heaving, are now sealed off. Alteration of dip and rise of coal-seam due to faulting has interfered somewhat with systematic development of the workings. Coal-seam strong, and minimum of timber used or required in working-places. Rules posted; report-books and plan to date.

Lauriston Colliery, Brighton Road (James Walker, owner and manager).—(3/9/08): Working-places in good order. Ventilation good. New second-outlet shaft being made to west of haulage-road.

Brighton Colliery, Brighton Road (D. L. McColl, owner and manager).—(3/9/08): Clay swelling in tunnel to such an extent as to require frequent repairs and renewals to timber-sets. Coal-workings safe. Ventilation good.

Glenmuir Coal-pit, Brighton (A. Louden, owner).—(3/9/08): No coal has been got from this mine for some time, and, as it has fallen at the entrance, work is suspended indefinitely.

Ferndale Coal-pit, Taieri Mouth (R. Ferndale, owner).—Small output maintained for use of settlers in the district.

Real Mackay Colliery, Milton (Bruce Railway and Coal Company, owners).—(22/12/08): Mine closed down on the 6th November, 1908, as worked out. Plant being removed as required to Waronui Mine, which is under same ownership.

Waronui Colliery, Milton (Bruce Railway and Coal Company, owners; J. R. Wilson, general manager; James Carruthers, mine-manager).—(22/12/08): The new second outlet and airway is now completed to daylight in a convenient gully 20 chains to southward of main entrance. Railway-deviation in hand will require, for closer connection, a new bridge across the Tokomairiro River. Ventilation must be described as weak meantime, the intention being to provide adequate arrangements as development proceeds. Pillar section rather warm in one place. Powder-storage underground not altogether in compliance with requirements of the Act: the mine-manager promised to have a door placed across the chamber. Report-books and plan to date.

Wallsend Coal-pit, Lovell's Flat (R. Hewitson, owner).—Small output, restricted to local requirements.

Lakeside Coal-pit, Lovell's Flat (J. McGillivray, manager).—Private pit. One hundred and ninety-four tons, for owner's requirements, was dug during the year.

Taratu Colliery, Taratu, Kaitangata (Taratu Railway and Coal Company, owners; G. R. Cheeseman, general manager; Thomas Shore, mine-manager).—(23/12/08): The new communication-drive to upcast air and second-outlet shaft was completed on the 13th May, 1908. A proper ladder-way for travelling has been placed in the shaft. Ventilating-fan at surface driven by oil-engine at 220 revolutions induced 13,200 cub. ft. of air per minute. Roof tender in places approaching fault on westerly side of workings. Development-work is now proceeding in the new-shaft section. A new pair of winding-engines by Roberts and Sons, Bendigo, have been recently installed. Explosives carefully handled. Rules posted; plan and report-books to date. A coal-miner named John Richards sustained injuries to pelvis by fall of coal from roof on the 17th July, 1908, whereby he was incapacitated from work for a period of fifty-five days.

Port Arthur Coal-pit (late Record Reign), Kaitangata (R. Penman, lessee).—A small quantity of coal is obtained intermittently for local requirements.

Wangaloa Coal-pit, Kaitangata (Joseph Smith, owner).—(28/8/08): No one about. Since last visit pillars have been drawn from the level to the solid, and roof fallen. Evidently not much work done here latterly, and most of the coal to rise of water-free level appears to have been won.

Kaitangata Colliery, Kaitangata (New Zealand Coal and Oil Company (Limited), owners; F. O. G. Lockhart, secretary, Dunedin; W. Carson, mine-manager).—Operations throughout the year may fairly be considered to have been successfully conducted. The area of coal to eastward of No. 7 fault has been extensively developed, and proved to be greater in extent than had been previously experienced in the colliery. There is thus a large quantity of coal in sight, with every indication of continuance of the main seam to south and eastward of present workings. Only the main seam is being worked, there being ample coal for requirements; therefore the 18 ft. and 6 ft. seams are not approached meanwhile. Owing to the alteration of dip from steep to comparatively flat seam on the anticline, haulage is accomplished more conveniently than formerly. Sections of work are opened on the panel system, and subsequently pillared and robbed as rapidly as convenient, then stopped off permanently, thus minimising danger from spontaneous ignition, to which the coal is extremely liable. It is also found that the method of "shovel-filled" adopted, whereby all dross is filled away with the coal, is an important factor in reduction of spontaneous heating. No work proceeding to northward of main haulage-road. Districts producing coal are Winch heading pillars and No. 2 heading pillars—both almost exhausted—pillars in No. 6 level off No. 3 heading, and the new work eastward of No. 7 fault and new-shaft area. The roof of No. 18 dip drive is being brushed preparatory to restarting. Ventilation usually adequate throughout the mine, an average of 30,000 cub. ft. of air per minute being in constant circulation, and air generally well conducted to working-faces by brattice when required. In advancing places in the solid, traces of gas are occasionally reported as occurring at the coal-faces. Seldom, however, do these interfere with working or warrant withdrawal of workmen. Safety-lamps only are allowed in the mine, about three hundred lamps being in daily use. These are in charge of an experienced and trustworthy official at the lamp-cabin near the mine-mouth. The lamps are carefully tested with compressed air before being handed to the workmen. The lamps are numbered, and a register kept of each issue. An unusual occurrence happened on the 16th January, 1908, when a quantity of gas became ignited at a spontaneous fire in No. 3 bord, No. 19 dip section. What was considered a slight fire had started in a fall on return air-course, which a gang of men had stopped off with three single-bord stoppings. As the men were putting on their clothes preparatory to leaving the work, an explosion occurred in the waste, blowing out the stoppings, and burning one man rather severely about face and arms, while two others escaped with slight burns and bruises. It appeared that sufficient atmospheric air had been imprisoned within the stoppings to supply the ignited fire with fuel, and that this occurred just before sufficient time had elapsed to allow of gases being generated whereby an ignition would have been impossible. It is worthy of note that the heating had been considered of such little import that water which was available had not been applied to the "fire." Had this been done the accident would not have happened. Owing to the successful manner in which the reinforced steel tubes have stopped off the worked portions of the coal-seams, the management decided to restore the main haulage-road at the brick wall, known as No. 3, where the deviation was made some years ago. This has been done efficiently, and the intention is to re-establish wire-rope haulage on the main ways. Steam winding-engine and appliances for hoisting men at second outlet and upcast air-shaft are tested frequently, and kept in order so as to be available for case of emergency. An ample supply of mining-timber is kept on the colliery premises for use as required. The mine is under careful management and supervision, both above and below ground, day and night continuously. For greater safety, shot-firing by electricity, and the use of only permissible explosives under the British Order have been again suggested. Separate magazines are provided for storage of explosives. Rules posted, report-books kept, and plan to date.

Castle Hill Colliery, Kaitangata (New Zealand Coal and Oil Company (Limited), owners; W. Carson, mine-manager).—(19/8/08): As has been usual, this mine was worked for output during the winter months only. Stone crosscut level pillars fast drawing to a close. Pillaring places in carriage heading crosscut are being gradually brought backward. No. 7 dip north and Jordan's seam working-places in good working-order. Travelled main return air-course to furnace upcast air-shaft, examined stoppings *en route*, which bore evidence of being well maintained. Water-balance apparatus at the second-outlet shaft was tested, and proved capable of raising and lowering persons, and is kept ready for use when required. Seventeen thousand cubic feet of air per minute is circulated throughout the mine. Only safety-lamps in use in all working-places, which were found free from gas. Open lights and electric lighting are allowed on the main haulage-roadway. Approved magazines on surface for storage of explosives. Rules posted, and requirements of the Act generally well observed.

Benhar Colliery, Stirling (Messrs. P. McSkimming and Son; Colin Murdoch, permit, manager).—(20/8/1908): Workings conducted in third and lowest seam worked; thickness not ascertained, but presumably 20 ft. and over. Fault met at dip face extends along the line of easterly workings, but displacement not serious so far as can be seen. Working safely conducted. Approved magazine erected for storage of explosives. Sanitary glazed ware and pipe factory on the premises is developing rapidly. During the year 2,300 tons of fireclay was produced.

Mount Wallace Colliery, Stirling (F. Park, lessee).—(30/8/1908): Seam strong; thickness not ascertained, but is seen to be 20 ft. or over. I drew the workman's attention to the necessity for using sprags where holing in a wide place; also suggested that area of pillars should not be less than that of the places driven.

Mainholm Colliery, Conical Hills, Waipahi (William Lischner, owner and manager).—(19/12/1908): Opencast pit. Stripping kept exceedingly well ahead of working-face, and mine worked in a safe manner. Seam 20 ft., all being won. A brick and tile manufacturing works is attached to the colliery. The powder-magazine is to be shifted to a place of greater safety, and new construction to be carried out as agreed upon. Report-book kept.

CENTRAL OTAGO.

Coal Creek Collieries, Coal Creek Flat, Roxburgh (Barber and Shaw, lessees; J. Barber, mine-manager).—(4/12/1908): The freehold portion of the mine is not now being worked. Underground mining is conducted from the opencast face on the leasehold property. Places are well-driven, and standing safely in this abnormally thick seam of coal. Natural ventilation good. The mine is unwatered by siphon.

McPherson's Coal-pit, Coal Creek Flat, Roxburgh (A. J. McPherson, permit, manager).—(4/12/1908): Opencast. In good working-order; stripping generally kept well in advance of the working-face. A tendency to work under an overhanging face of coal was observed, and permit-holder's attention drawn to the dangers attendant upon the risky method of working, however strong the coal might appear to be. The condition of the heated part of the mine referred to in last year's report is now normal.

Craig's Preseverance Coal-mine, Coal Creek Flat, Roxburgh (James Craig, lessee; W. S. Craig, permit).—(4/12/1908): Seam, 75 ft.; dip, 1 in 3 north. Opencast now discontinued, and driving resumed. In upper layers seam soft and coal pyritous, facilitating spontaneous ignitions, of which there are several where falls of roof have occurred. These are carefully stopped off. Clay from hanging-wall, where fallen, is found liable to cause heating of dross and fallen roof or crushed pillars where they occur. Pumping and hauling done by water under hydraulic pressure. Six men employed. No explosives used.

McQueenville Colliery, Alexandra (S. T. Lett, lessee).—(4/11/1908): Pits have now been filled in, and edges of plumps to surface trimmed so far as may reasonably be expected. Damage to surface is practically confined to that part of the area within the influence of percolation from the Alexandra Borough water-race, about 1 acre in area. The coal is practically worked out, and the area may now be considered as settled and abandoned. The Warden has been recommended to consent to the application for cancellation of the coal lease.

Alexandra Coal-mine, Alexandra (including Undaunted Coal-mine, being adjoining section under same ownership), (Messrs. Mathias Bros. and Co., lessees; D. McNeill, mine-manager).—(3/12/1908): Connection made with Thomson's old workings to rise and south-west proved satisfactory, and closed again for future working. Attention now being successfully paid to extraction of coal in dip area, which had formerly been abandoned as unworkable on account of the unstable nature of roof and floor. Restoration of a disused shaft provides further convenience for second outlet and return air-shaft. Rules posted and plan forwarded.

Alexandra Coal Company, Alexandra (L. Ryan, secretary; J. Pollock, mine-manager).—(3/12/1908): A number of improvements have been effected during the year, among which may be mentioned the enlargement of sump at pit-bottom, thereby enabling Sunday pumping to be dispensed with; and the placing of dip-pump steam-pipes in return airway, and turning of exhaust steam from pumping-engines into upcast air-shaft; but the chief matter for congratulation was the completion of the new second outlet and air-shaft, thereby enabling working by small numbers of men on shift to be dispensed with, and workmen are now on day-shift, with consequent reduction in cost of production. Substantial ladders are placed in the new shaft. The working-places are kept in good order, boreholes in roof regularly continued, and, in addition, flank boreholes are put in nearing the riverward area. A few wet backs were encountered, which invariably pined off through time. Traversed the old workings, which were found standing in good order; no gases. Report-books kept, rules posted, and plan to date. Ventilation generally fair, and other requirements of the Act well observed.

Dummeys Coal Lease, Alexandra.—(11/6/1908): Owing to a band of stone in the seam, and the poor quality of the coal, it became practically unsaleable. After suspending operations for some time the shaft has been filled up, and cancellation of lease is now applied for.

Cambrian Coal-pit, Cambrian (Caleb Dungey, lessee).—(1/12/1908): Fair area stripped ahead. Lignite and shale seams associated.

Welshman's Gully Coal-pit, Cambrian (Sarah McGuckin, lessee; James McGuckin, manager).—(1/12/1908): Stripping and pumping by hydraulic water-pressure. Fair area stripped in advance of working-face.

Jones's Coal-pit, Cambrian (Robert Jones, Lessee).—(1/12/1908): The lessee has been engaged stripping and opening the pit, which it is proposed to work underground in future.

Price's Coal-pit, Blackstone Hill (D. McKnight, owner).—Coal for private use only raised during the year.

St. Bathans's Coal-pit, St. Bathans's (James Enright, lessee).—(2/12/08): Only about 15 ft. of the seam is worked, owing to inadequate appliances for unwatering the pit, which I found in a bad working-state, face undermined, and no stripping ahead, as should be done for safety and economical working. Clay overburden fallen in—was attributed to heavy snow in winter. I instructed Mr. Enright that the pit where he was working was in a dangerous state, and that he was liable to sustain serious accident by continuing his slipshod manner of working.

Rough Ridge Coal-pit, Idaburn (including McLean's coal-pit, which is under same ownership), (Mrs. M. Beck, lessee; William Beck, manager).—(2/12/08): A reasonable area of overburden stripped in advance of working-face. Pit in fair working-order. Hydraulic lift-pump used for unwatering the pit. Small quantity of explosive used, and kept in an approved magazine.

Idaburn Coal-pit, Idaburn (J. White, lessee).—(2/12/08): Now working final block of coal to rise on boundary of adjoining lease. Attention will require to be turned to coal to dip, which, however, lies below the country water-level, and further expense will have to be incurred in plant for pumping purposes if work is to be continued.

Border Coal-pit, Rough Ridge.—(2/12/08): A new tenant named Richard Thomas is awaiting transfer of lease preparatory to reopening this pit, which, from its favourable situation, should be a convenience to the settlers in the district.

Gimmerburn Coal-pit, Gimmerburn (George Dougherty, owner).—A small quantity of coal continues to be raised for the convenience of the settlers in the district.

Donaldson's Coal-pit, Mount Highlay (W. and G. Donaldson, lessees).—Two hundred and fifty-eight tons of coal won during the year for use at the tungsten and scheelite mines.

Clyde Collieries Company, Clyde (Vincent and Dairy Creek Mines), (W. H. Ackroyd, secretary, Dunedin; G. F. Turner, mine-manager).—(25/9/08): The new dip is being driven in the town coal-seam, which is continuing good, and places are being won therefrom. Stoppings are in on the fringe of pillared area; no undue warmth observable. Ventilation fair; rules posted; plan to date.

Fraser River Coal-mine, Shepherd's Flat, Clyde.—The steam gold-dredge, for supplies to which this mine was opened, having ceased operations, there is no present demand, and the mine is closed.

Cardrona Colliery, Cardrona (R. McDougall, lessee).—As has been usual, the seam is composed of bands of hard and soft coal alternately. The workings are now in a patch of crushed coal, with indications of hard band coming in on the lower level. Operations are confined to working on the strike in a southerly direction. Some prospecting is suggested northerly, but no expenditure has been incurred there as yet.

Gibbston Coal-mine, Gibbston Saddle (Duncan and Scheib, lessees; J. Duncan, mine-manager).—(13/5/08): Mine-workings and roadways in good working-order. Ventilation good; return airway rather small in places. Report-book up to date; rules posted.

Cromwell and Bannockburn Collieries Company, Bannockburn (T. K. Harty, Managing director, Dunedin; W. R. Parcell, mine-manager).—(26/9/08): Kawarau or Shepherd's Creek Mine: A run of sand and water from roof in extreme dip-places south occurred during the early part of the year, and filled the bottom places and pillared area, which are now settled. Coal-seam to north and south of main dip having thinned to unworkable, the pillars are now being drawn outward, with a reasonable percentage of coal being won. Communication has been established with No. 4 level for second-outlet return on north side of dip. Water-percolation from surface having been successfully treated, there is no present necessity for installation of new Tangye pump procured; another satisfactory feature is that Sunday pumping, formerly imperative, is thereby enabled to be dispensed with. Ventilation fair; rules posted; reports to date.

Excelsior Mine: Operations suspended throughout the year owing to the policy adopted of concentrating workmen at Kawarau Mine. A large area of ground is standing on pillars ready for withdrawal at an opportune time. Upkeep of the mine is maintained.

Wilson's Mine: Communications having been effected with Excelsior Mine, this mine may now be conveniently combined with the Excelsior.

Cairnmuir Coal Company, Bannockburn (John Hodson, mine-manager).—(26/9/08): Dip drive being extended, and places are broken away having substantial pillars, on account of the steepness of seam, which varies from 1 in 1 to 1 in 2. Communication made with new second-outlet and air shaft on western bank of the Bannockburn Creek. Ventilation fair, and workings safely conducted. A feature of this mine is that the deposit in its extent had not been anticipated. The coal is of superior quality for the district.

Angel's Coal-pit, Bannockburn (C. Angel, licensee).—No coal got during the year.

Ryder's Coal-pit, Nevis (Charles Scott, lessee, permit).—(11/12/08): Opencast pit. In good working-order. Overburden sluiced away with water.

Nevis Coal-pit, Nevis (Charles Scott, lessee).—(10/12/08): No coal has been won from this pit during the year. A fire has broken out in an old drive in the soft-coal area. A small supply of water is available, and the overburden will be sluiced down and the fire smothered.

Ritchie's Coal-pit, Lower Nevis (Robert Ritchie, lessee).—(11/12/08): Seams semi-vertical; aggregate width over 40 ft. The top stuff is sluiced away, and the coal-seam worked opencast. In good working-order.

Upper Nevis Coal-pit, Upper Nevis (James Ritchie).—(11/12/08): Mine idle. Coal soft, and seam considerably broken.

SOUTHLAND.

Pukerau Coal-pit, Pukerau (C. O'Hagan, permit).—(29/4/08): This mine is situated on the Coal Reserve, comprising 15 acres. Workings in good order; ventilation good. Suitable magazine in use for explosives.

Nelson's Coal-pit, Pukerau (J. H. Nelson, lessee).—(29/4/08): This mine, formerly known as Dudley's, is also situated on the Pukerau Coal Reserve. Mine in good order; ventilation good.

Glover's Coal-pit, Pukerau (Thomas Glover).—(29/4/08): Opencast pit. Coal mined for private use only.

Mason's (late Glover's) Coal-pit, Pukerau (Andrew Mason).—(29/4/08): Opencast pit. Coal mined for private use only.

Otikerama Station Coal-pit (Edwards Bros.).—(29/4/08): Opencast pit. Coal mined for private use sometimes.

Mason's Coal-pit, Pukerau Road (Andrew Mason, sen.).—(29/4/08): Opencast pit. Coal mined for private use.

H. Smith's Coal-pit, Pukerau Road (Hugh Smith).—(29/4/08): Opencast pit. Coal mined for private use.

R. Smith's Coal-pit, Pukerau Road (R. Smith).—(29/4/08): Opencast pit. Coal mined for private use.

Riverview Coal-pit, Gore (L. D. Nicol, owner).—Coal continues to be raised for local use at this semi-private pit.

Whiterigg Colliery, East Gore (Paterson and Jones, owners).—(1/5/08): Abandoned. Mouth blown in, and only now remains to have the overhanging face brought down with a bar, which Jones promised to do. This pit and Heffernan's (including Resin Dip Colliery), being now under one ownership, may be all brought together in the statistics, under the name of Heffernan's Colliery.

Resin Dip Colliery, East Gore (Paterson and Jones, owners; E. Jones, permit).—(1/5/08): Driving on an outcrop on coal superior to lignite. The first dip proved to contain too much water to be coped with by small pumping plant. Magazine approved.

Heffernan's Coal-mine, East Gore (W. C. Burgess, permit).—(1/5/08): In good working-order. Powder-magazine approved.

Lignite Reserve, East Gore.—(19/12/08): A fire which had originated on the outcrop of partially worked ground had presumably become ignited by gorse-burning. I have been in communication with the Commissioner of Crown Lands, Invercargill, with a view to the tenant of grazing being required to keep the fire under. There has been no mining conducted on the area for some years.

Rosedale Coal-pit, Waikaka Valley (August Reinke, owner).—(21/2/1908): Owing to the cessation of dredging operations in the immediate neighbourhood, no coal has been mined for sale since May, 1907. The owner draws a small supply from the pit for private use.

Green's Coal-mine, Gore (Thomas Green, owner; J. Mason, mine-manager).—(10/9/1908): Mine in good working-order; roof strong and safe. Seam 17 ft., of which 10 ft. to 12 ft. worked. Rules posted, report-books kept, and plan to date. Ventilation good. Suitable magazine for storage of explosives approved.

Smyth's Coal-mine, Gore (Broome Bros. and Brown, owners; James Broome, jun., permit).—(10/9/1908): Air somewhat dull with powder-smoke, which new air-shaft being sunk should obviate. Seam 16 ft.; 10 ft. being worked. Rules posted; report-book and plan to date. New powder-magazine being erected.

Tait's Coal-mine, Bushey Park Estate, Croydon (James R. Tait and Co., owners; George Tweedie, permit).—(23/7/1908): Seam 30 ft., of which about 10 ft. is being worked out to the outcrop, which is coming in all around, the deposit apparently being purely coal. I drew attention to necessity for more timber being used at one place, where the miner was working under the lip of roof at pillar-working. Roof strong. Air good.

Boornwell Coal-mine, East Chatton (G. P. Johnston, owner; Cameron and Johnston, lessees).—(9/9/1908): Robbing of pillars and head coal in section opened now nearing completion. The new mine is now in to the coal. I found the powder-magazine in disrepair; Mr. D. Cameron subsequently wrote me that my requirements had been fulfilled.

Pacey's Freehold Coal-pit, East Chatton (T. H. Maslin, lessee; James Strachan, permit).—(9/9/1908): Mine-workings and roadways in good order. Levels driven with stentons for ventilation in proper manner. Powder-magazine in good order; proper canisters provided.

Chatton Coal-pit (late East Chatton Coal-pit), East Chatton (P. and G. Ramsay, lessees; P. Ramsay, permit).—(9/9/1908): New level driven on outcrop. Seam, 30 ft. Places driven wide and high, but apparently safe on account of the strong nature of seam. Powder-magazine required to be so covered to insure greater safety. Rules posted.

Chatton Coal-pit, Chatton (A. Beath, lessee).—(21/2/1908): Owing to difficulty of working this vertical seam it became abandoned. The coal-seam was apparently found to be too narrow to pay for working. The walls are fallen in, and the pit is in a state of collapse.

Ford's Coal-pit, Chatton (P. Ford, sen., owner).—(21/2/1908): Nothing doing on this occasion. Pit standing full of water.

Knapdale Coal-pit, Knapdale.—(21/2/1908): Apparently very little doing here now. Water risen, and standing in the main drive.

Thorndale Coal-pit, Waikaka Valley (Thomas Highsted, owner).—(21/2/1908): Some stripping has been done in preparation for mining. Operations having been conducted as far as possible to the dip for free drainage, pumping machinery is now required in order to further develop the mine.

Springfield Coal-pit, Waikaka Valley (J. P. McIntyre, owner, Gore; D. McColl, lessee, permit).—(10/9/1908): Opencast pit. Seam 15 ft., of which upper 8 ft. is worked. Stripping kept fairly well ahead of working-face. Blasting-powder stored in suitable magazine, and carefully handled.

Willowbank Coal-pit, Waikaka Valley (Edward Charles, manager).—(10/9/1908): Seam 15 ft., of which 10 ft. to 12 ft. worked. Workings safely conducted. A tendency exists, however, towards leaving pillars of smaller size than might be considered advisable for the future stability of the mine. Rules posted, and report-books to date. Suitable powder-magazine approved.

Glenlee Coal-pit, Waikaka Valley (J. McGill, owner; D. T. McGill, permit).—(9/9/1908): In opencast, stripping kept well ahead. Underground workings in good order. Seam 20 ft., 10 ft. being worked underground.

McDonald's Coal-pit, Waikaka Valley (A. A. Edge, owner; W. McIvor, permit, and G. Mitchell, lessees).—(9/9/1908): Levels driven east and west of main dip. Places taken wide and high are fallen in, while pillars are left too small for proper support. Powder-magazine has been allowed to become somewhat dilapidated. The lessee subsequently wrote me that this had been rectified. Rules posted. Report-book and plan kept.

Anderson's Coal-pit (late Radford's) Wendon (Samuel Yeomans, lessee).—(21/3/1908): The seam is perpendicular, 18 ft. in width, of which 10 ft. is won in "lifts." A cross-measures drive connects the workings with the loading-bank. Ventilation is maintained by an opening through into the opencast. Rules posted. During the summer threshing requirements and winter stock for farmers are taken from the pit, which is closed during the winter months.

Landslip Coal Company's Mine (disposed of to John Hughes, permit), *Waikaia*.—(8/9/1908): The fault having been struck necessitated falling back upon pillars to maintain output. A crush subsequently came upon the lower part of the workings, and several places became lost. Two pairs of men were engaged robbing pillars and head coal from near the bottom of dip, where a nuisance was being caused by exhaust steam from pump turned into the water lodgment, thereby creating condensation, which filled the working-places with an uncomfortable haze. This was to be rectified by shifting the pump further up the dip, and conveying exhaust steam to surface by return airway. Seam 17 ft., all being worked. Rules posted; report-book kept; plan to date.

Riverbank Colliery, Landslip, Waikaia (W. Kyle, permit, lessee).—(24/7/1908): Seam 10 ft., all being worked. Pillaring outward from the boundary on Rear's old workings. Pump driven by oil-engine underground. Travelling-way to second-outlet shaft in need of repairs. Reports of examination with safety-lamp to be entered in daily report-book. Air fair. The operations of the Te Aroha gold-dredge have played havoc with the roadway on the river-bank, which is also the roadway for ingress and egress for the coal-mine.

Waikaia Coal-mine, Landslip, Waikaia (Alexander Cain, permit, lessee).—(24/7/1908): This new mine is equipped with steam hauling-gear and steam-pump. The new dip is down 120 ft. Seam, 10 ft. Dip, 1 in 4. I cautioned the lessee that there was a tendency to drive places too wide and high for future economical recovery of pillars and head coal. (8/9/1908): Acting upon information received, I instituted proceedings against Mr. Cain for employing labour on Sunday, the 19th July, without being the holder of a permit from the Inspector as required by section 39 of "The Coal-mines Act, 1908," when Cain pleaded guilty, and was fined £1, and costs 9s.

Rossvale Coal-mine, Landslip, Waikaia (Bond Bros., owners; J. McLelland, mine-manager).—(24/7/1908): Bond Bros. having reacquired possession of the mine from Mr. A. Cain, work is continued as usual. Seam, 10 ft. Roof strong, and all places standing well, with minimum of timber used. Air good, and well conducted to faces by brattice. Second-outlet and air shafts (two) in good order; windlass and rope provided. Copy of General Rules (new issue) required to be posted. Main level driven unreasonably wide (18 ft.) for advantageous future recovery of pillar-coal. Locked magazine approved.

Muddy Terrace (late Goldie's) Coal and Shale Pit, Muddy Terrace, Waikaia (Knuckey and Junker, lessees; F. A. Junker, permit).—(8/9/1908): Rules posted. Seam 14 ft., including 10 ft. of shale of good quality. Seam improves in quality towards dip workings, which are, however, at present filled with water. Engine and pumping plant expected shortly. Places safely worked; drives not too wide, and good pillars left in. Air good.

Argyle Coal-pit, Upper Waikaia (C. H. Hutton).—This pit continues to be worked on a small scale.

Mataura Coal-mine, Mataura (Mataura Collieries (Limited), owners; J. A. Yule, secretary, Gore).—(23/7/1908): Coal-seam 7 ft. Stripping, 8 ft. to 10 ft., is kept well ahead of the working-face. A contract has been let for production of coal, with which good headway is being made. It is intended to get the coal in future by underground mining. Suitable magazines for storage of explosives approved.

Mataura Lignite-pit, Mataura (Beattie, Coster, and Co., owners; W. Coster, manager).—(23/7/1908): Opencast pit, systematically worked by keeping stripping well ahead of working-face. Seam, 10 ft. to 20 ft. Stripping, 10 ft. of gravel, which is removed by horse-power with plough and scoop. Magazine for storage of explosives approved.

Boghead Coal-pit, Mataura (C. P. Sleeman and Co., owners; C. P. Sleeman, jun., manager).—(23/7/1908): This pit, after standing idle for some time, was unwatered during the early part of the year under new proprietary. Seam, 12 ft. to 20 ft., of which 12 ft. being worked. Stripping, 10 ft. Powder-magazine approved.

Waimumu Colliery Company, Waimumu (Waimumu Colliery Company, owners; J. Wallace, permit).—(23/7/1908): Two men engaged in the upper seam drawing pillars from boundary outward. The seam is worked to water-free level only. A lower seam of 6 ft. is underfoot. Rules posted. Report-book kept. Powder-magazine approved.

Ota Creek Coal-pit, Ota Creek (James E. Genge, owner).—Opencast pit, from which an output of 500 tons was obtained during the year.

Clarke's Coal-pit, Wyndham (Samuel Clarke, owner).—(24/10/1908): Opencast seam, 10 ft., all worked. Stripping kept well in advance of working-face. Only a small quantity of blasting-powder kept on hand, and it is obtained for use as required from the local public magazine.

Ferry Road Coal-pit, Wyndham (B. Sutherland).—(24/10/1908): Opencast pit; apparently abandoned, as pit standing full of water, although some of the machinery is still on the ground.

Robin Hood Coal-pit, Pine Bush (William Couser, manager; Jessie Couser, owner).—Opencast pit. During the year 179 tons of coal was produced.

Graham's Coal-pit, Fairfax (P. S. Graham, owner).—(16/11/1908): Seam, 6 ft. Work consists of coming back on the low side of level pillar. Place safely timbered to face. Ventilation could be improved by restoration of return airway. Owner explained that the air was always good, or he would provide a fresh airway.

Ardlowie Coal-pit, Fairfax (Edward Poole, owner).—(16/11/1908): Opencast pit. A small quantity of coal being taken out for local requirements.

Fairfax Coal-pit, Fairfax (Donald McIntosh, owner).—(16/11/1908): A small opencast pit on the Ringway Estate, which was known as McMinamin's. Very little work done here lately.

Smith's Coal-mine (Spreybank No. 2) Fairfax (William Smith).—(16/11/1908): Seam 3 ft., with band of stone making; too thin to pay for working. Abandoned.

Blackmount Coal-pit, Loudon Hill, Bellmount (P. Studholme, owner).—(19/11/1908): Seam 5 ft., in coal of Nightcaps seam quality, dipping 1 in 4 westerly. Cross-measures drive from daylight, and level southerly driven about half a chain. Timbering correctly done to face.

Redcliff Station Coal-pit, Redcliff, Otautau (Helder and Awdry, proprietors).—(20/11/1908) : Some prospecting has been done on the face of a high terrace, exposing several thin seams, but of a non-paying character.

Te Anau Coal-pit, Upukarora, Te Anau Downs (Tourist and Health Resorts Department, owner; Captain Dore, agent, Manapouri).—(21/11/1908) : Opencast pit on terrace above banks of Upukarora River. Seam, 7 ft. Stripping, 8 ft. to 10 ft., overhanging in places, clearly indicating undermining, an unsafe manner of working the pit, and hand-to-mouth, as it were, as might be expected by the system in vogue of annual competitive contracting for getting the coal. In the interests of the lake-steamer traffic, and as this is the only coal-pit convenient, it would appear to be worthy of being placed on a more workmanlike and permanent basis. There is no plant on the ground. The pit is easily capable of being conducted in a satisfactory manner. I subsequently wrote Captain Dore, Tourist Agent, Manapouri, as to the condition of the pit.

Beer's Coal-pit, The Key (Mrs. T. Beer, lessee).—(21/11/1908) : Opencast pit, situated on a branch of Princester Creek at the foot of Waterloo Peak, Takatimo. The coal-seam occurs on a spur of the mountain in slip country, is troubled, and averages 6 ft. Stripping, 10 ft. to 20 ft., removed by water brought in under pressure. Dip irregular, erratic.

Mount Linton Coal-pit, Mount Linton, Nightcaps (W. J. A. McGregor, owner).—(17/12/1908) : An old pit. Outcrop of coal is seen in the bed of Morley Stream. Some further prospecting done recently, but coal in quantity not now being got here. Seam apparently below water-level.

Nightcaps Colliery, Nightcaps (Nightcaps Coal Company (Limited), owners; William Handyside, managing director, Invercargill; W. Barclay, mine-manager).—(18/12/1908) : Work proceeded much as usual throughout the year. The advantages of the system of development set out some years ago are now more readily perceivable, the boundaries having been reached, and working homeward on pillars and head coal, of which it is estimated that about 85 per cent. is being won. No. 1 district: Ventilation, 18,000 cub. ft. of air per minute at intake. Dips are driven to the fault, and places won, subsequently coming back on robbing-work. On the rise section double and treble stoppings are in on the fringe of the gob where heating occurred; in other places the roof is brought down and the breaks kept close up to the workings, for greater security of workmen. Ample timber is continually used, and large supplies kept on the premises. Similar conditions prevail in the No. 2 district, which is ventilated by fan separately from No. 1 district. The underground workings and machinery, also surface plant and loading-bank arrangements, are maintained in good order. The opencast workings continue to furnish a considerable proportion of output from the colliery. Rules posted, report-book kept, plan to date, and requirements of the Act generally well observed. Separate magazines are provided for storage of explosives. Samples of mine-air were collected and submitted to the Government Analyst, whose report showed that he was unable to detect firedamp in the samples forwarded.

Hit or Miss Coal-pit, Nightcaps (William Tinker, lessee, permit).—(23/10/08) : Seam 7 ft., all worked. Places well secured with timber. Air good. Steam-pump required to drain water and enable coal being worked to dip. Report-book and copy of Act kept. Rules being posted.

Lamont's Coal-mine (H. B.), Nightcaps (G. R. Spence, lessee, permit).—(23/10/08) : Seam 7 ft., all worked. Drive on boundary workings securely timbered.

The Willow Coal-pit, Nightcaps (John Clark, lessee).—(17/12/08) : Opencast pit. Stripping well ahead of working-face.

New Brighton Coal-mine, Wairio, Nightcaps (D. McKenzie and Co., owners; D. McKenzie, permit).—(17/12/08) : Seam 17 ft., all being worked by driving and stripping. The mine is situated on the 40-acre section held by William Reed, jun. William Reed's 10-acre section is not at present being worked. McBride's area is practically worked out to the rise, only coal for owner's private use now being got.

Wairio Coal-mine (lately Manuka Hill), Nightcaps (Wairio Coal Company, owners; J. Lewis, permit, manager).—(17/12/08) : Opencast working suspended, and now driving in the coal. Roof strong; ventilation good; seam 17 ft. 10 ft. now being worked.

Timpany and Co. had prospected by boring on an area at Wairio held under prospecting license. Results are stated to have been unsatisfactory.

Wildbush Coal-mine, Riverton (William Smith, lessee; J. Armstrong, owner).—(29/7/08) : Opencast pit. The pit looks as though some 1,000 tons had been taken out some years ago for disposal locally. Seam 11 ft. Stripping of clay, from 3 ft. to 6 ft. overburden. A tram-line has been made 40 chains to the wharf on Pourokino River, and the coal is to be barged to Riverton, two miles and a half distant. A borehole is said to have been put down 800 ft. on the property by Messrs. Anderson, and a seam of coal struck, but further particulars are not available.

Bush Siding Coal-pit, Seaward Bush (F. R. Bowden, manager).—A regular output continues to be maintained.

REMARKS.

Samples of mine-air taken from Kaitangata, Nightcaps, and other mines have been analysed by the Government Analyst, to the great advantage of all concerned.

Ambulance stretchers and kits under the St. John's Ambulance Association continue to be maintained at Kaitangata, Castle Hill, Nightcaps, Allandale, and Green Island Mines, at which centres coal-workers, under medical tuition, have regularly qualified for rendering first aid to the injured.

A set of Vajen-Bader rescue-apparatus is kept at Kaitangata Mine, but experiments with same are not popular.

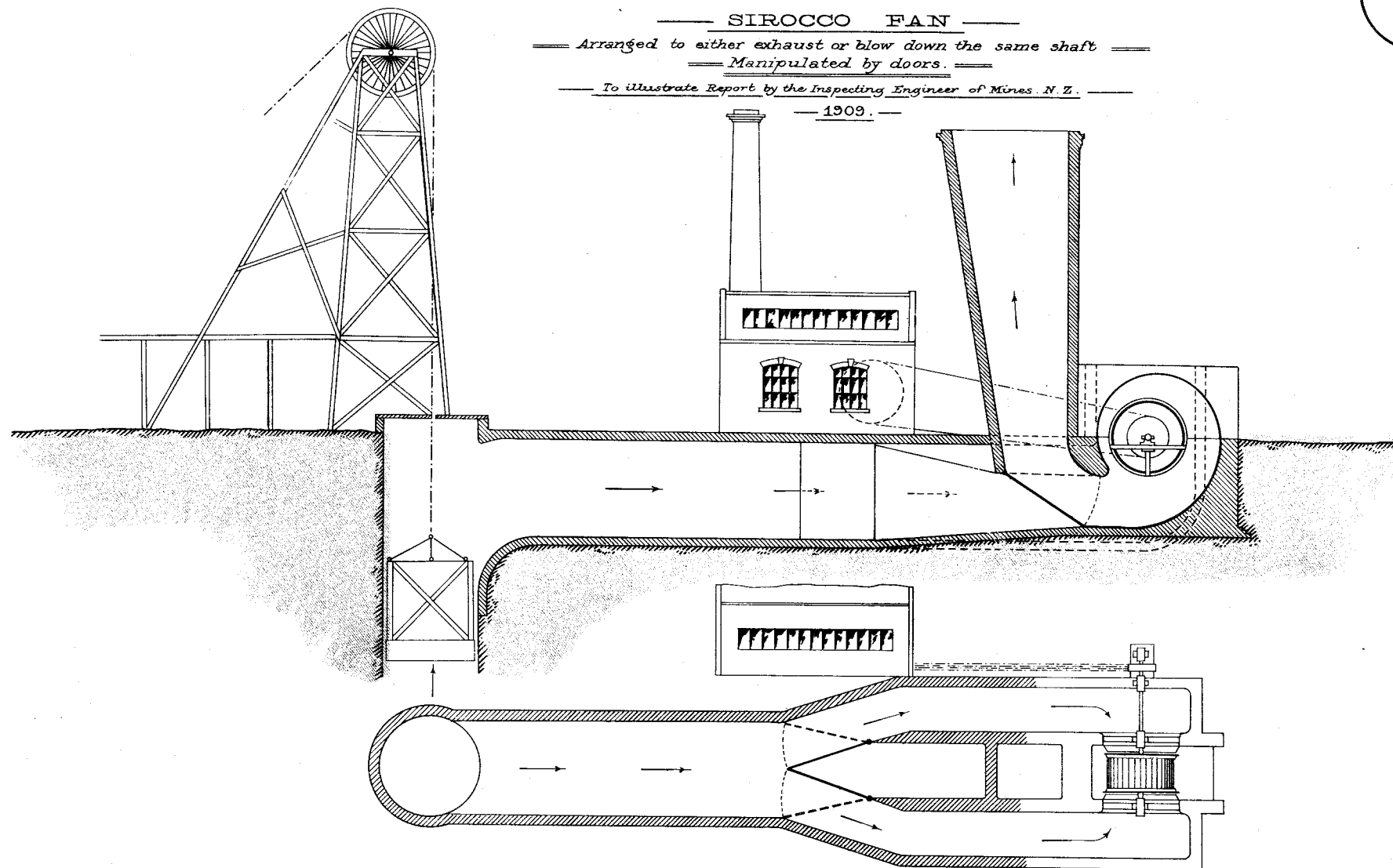
SIROCCO FAN

Arranged to either exhaust or blow down the same shaft

Manipulated by doors.

To illustrate Report by the Inspecting Engineer of Mines N. Z.

1909.



OUTPUT.

The output of coal and lignite (Southern District) for the year 1908 amounted to 452,482 tons, a decrease of 9,528 tons on the previous year's output.

	Tons.
Canterbury	21,788
Otago	288,004
Southland	142,690
Total	452,482
Output for previous year	462,010
Decrease for 1908	9,528

The contributions by coal-owners to the Coal-miners' Relief Fund amounted to £447 5s. 3d., while payments from the fund to the amount of £430 8s. 5d. have been recommended on account of accidents which have occurred in and about coal-mines in the district during the year.

• *Return of Coal-output (Southern Mining District) for the Year ended 31st December, 1908.*

	Tons.
Abstract of output of coal for year ended 31st December, 1907 ..	462,010
„ „ „ „ „ 1908 ..	452,482
Decrease, 1908	9,528

Summary of Outputs.

District.	Output, 1908.	Output for 1908 (Otago).	Output, 1907.	Increase, 1908.	Decrease, 1908.	Contributions to Coal-miners' Relief Fund.
	Tons.	Tons.	Tons.	Tons.	Tons.	£ s. d.
Canterbury	21,788	...	23,679	...	1,891	19 6 11
North Otago	18,657	...	23,075	...	4,418	19 4 7
South Otago	228,773	288,004	227,847	926	...	219 18 0
Central Otago	40,574	...	44,428	...	3,854	40 17 9
Southland	142,690	...	142,981	...	291	147 18 0
Totals	452,482	...	462,010	...	9,528	447 5 3

Outputs of 10,000 Tons and over.

Name of Mine.	Output, 1908.	Contributions to Coal-miners' Relief Fund, 1908.
Kaitangata and Castle Hill	110,315	105 15 3
Nightcaps	48,487	50 9 5
Saddle Hill Collieries :—		
No. 1 Mine	8,250	8 11 10
No. 2 Mine	19,442	20 5 1
Jubilee	21,807	22 14 6
Freeman's	20,758	19 17 6
Taratu	17,346	17 5 4
Allandale	14,227	14 16 3
Homebush	13,756	11 18 5
Waronui	12,178	10 6 11
Other mines	165,916	165 4 9
Totals	452,482	447 5 3
		Tons.
Fireclay (Canterbury and Otago)	...	4,898
Sand (Green Island coalfields)	...	16,554
Lime	...	33,000
Phosphate (Clarendon, Otago)	...	5,933

ACCIDENTS.

There has been comparative freedom from serious accident throughout the year. A total of eighty-four cases of accident were reported to me, of which two resulted in serious consequences to the individuals. The balance of the cases were reported chiefly in connection with claims on the Coal-miners' Relief Fund, of which, after inquiry, five had to be disallowed.

Non-fatal (Serious) Accidents.

16th January, 1908.—William Forrester: Burns of face and arms by an ignition of gas at a spontaneous fire in Kaitangata Mine.

9th June, 1908.—Robert Ferguson, repairer, Kaitangata Mine: Fracture of both legs, caused by being run down by a rake of full boxes on the horse-road.

Summary of Non-fatal (Serious) Accidents on the Southern Coalfields during 1908 classified.

					Number of Separate Non-fatal Accidents.	Number of Per- sons injured.
Explosions of firedamp	..	..	..	..	1	3
Falls in mine	..	..	..	..	..	..
Shaft accidents	..	..	..	..	..	..
Miscellaneous—						
Underground	..	..	..	..	1	1
On surface	..	..	..	..	..	..
Totals	..	..	..	..	2	4

PROSECUTIONS.

Proceedings were taken in the Magistrate's Court on two occasions, and fines imposed in each case :—

1. Alexander Cain, mine-owner, Waikaia, was charged with employing men on Sunday, 19th July, 1908, he not being the holder of a permit from the Inspector, and on pleading guilty was fined £1, and costs.

2. Alexander S. Gillanders, mine-manager, Freeman's Colliery, Abbotsford, was fined £5, and costs £2 9s., for inadequate ventilation of working-places on the 29th December, 1908.

I have, &c.,

E. R. GREEN,
Inspector of Mines.

ANNEXURE B.

PAPERS SET AT THE 1909 MINE-MANAGERS' EXAMINATION.

EXAMINATION OF CANDIDATES FOR FIRST-CLASS CERTIFICATES OF COMPETENCY.

SUBJECT 1.—*Prospecting, Shaft-sinking, Tunnelling, and Opening out a Colliery.*

1. If Carboniferous rocks were found dipping under more recent geological formations, state in detail what measures you would adopt to determine the existence of workable seams of coal to the best advantage.

2. Describe the necessary plant and appliances, and how you would operate same, to sink a pair of shafts, 80 yards apart, to a depth of 1,700 ft., with a feeder of water of 300 gallons per minute following the sinking down to 1,450 ft.

3. A pair of shafts having been sunk 1,500 ft. to a seam of coal dipping 1 in 6, with soft floor and fairly hard roof, describe and also show by sketches how you would proceed to open out the colliery for an output of 1,200 tons per day of eight hours.

4. Describe, and show by sketches, the modern equipment of a mine with respect to drainage, haulage, winding, and screening, for a large output.

SUBJECT 2.—*Working Coal and timbering underground.*

1. Describe, and illustrate by sketches, the bord-and-pillar, double-stall, longwall working out, also working home, systems of coal-winning, and explain the conditions under which any one of these systems would be the better to adopt.

2. Explain the causes of "creeps" and "thrusts," and give sketches illustrating the effect of same; also state the anticipatory measures you would adopt to prevent their occurrence.

3. Describe, and show by sketches, the different methods of coal-hewing with which you are acquainted, and the methods of timbering the working-places. Explain the dangers to be guarded against, with special reference to pillar extraction.

4. If you had to take out some bars in a main road to increase the height where the weight of roof upon them is very heavy, explain and show by sketches how you would do it.

SUBJECT No. 3.—*Gases of Mines, Spontaneous Combustion, and Ventilation.*

1. Describe the properties of oxygen and nitrogen gases, give the specific gravity of each, and state what effect nitrogen has on the oxygen of the atmosphere.
2. Enumerate the gases met with in mining and the causes of their generation, give their specific gravities, and state what means you would adopt to remove such gases.
3. What are the causes of spontaneous combustion, and what are the principal dangers resulting from underground fires, and what steps would you take to obviate such?
4. If a large accumulation of explosive gas should be met with in a mine where furnace ventilation is applied without a dumb drift, what would you do to remove the gas?
5. A steam-jet and fan acting together on an upcast shaft produce 80,000 cubic feet of air per minute. When the fan is stopped the jet produces 16,000 cubic feet. What quantity would the fan running alone give?
6. Ventilate the annexed plan, showing stoppings, air-currents, air-crossings, canvas doors, bratticing, doors, and regulators.
7. There are two airways: the first is 10 ft. square, the second 8 ft. by 5 ft. The same quantity of air has to be passed in each airway. The water-gauge in the first is 0.8. What will be the water-gauge in the second airway?

SUBJECT 4.—*Dealing with Old Workings and other Sources of Danger.*

1. In reopening a large area of old workings, one section to the dip and one to the rise, which have been standing sealed off for some time, what measures would you adopt?
2. How would you deal with a spontaneous outbreak of fire in a heavily fallen goaf adjacent to active workings?
3. The greatest percentage of accidents in mining occur from falls of roof and sides: what are your views with regard to still further minimising such accidents?
4. What is a "missed shot" and a "blown-out shot," and what accidents are liable to arise from the use of explosives?
5. Describe what measures you would adopt for general safety in working seams of coal under tidal waters?

SUBJECT 5.—*Steam Boilers and Engines used about Mines.*

1. Describe the purposes of the following steam-boiler appliances: viz., steam-gauge, water-gauge, safety-valve, blow-off tap, manhole, damper; also, explain the principle of the Bourdon steam-gauge.
2. Enumerate the necessary precautions to be observed in operating steam boilers and engines, to avoid accidents; and state what steps you would take to have them effectively carried out.
3. The air-cylinder of a compressor is 36 in. diameter and 6 ft. stroke, double-acting, and working at 30 strokes per minute the air is compressed to 60 lb. per square inch above the atmosphere: how many cubic feet of air should be delivered per hour, assuming the atmospheric pressure at 15 lb. per square inch?

SUBJECT 6.—*On Mine-drainage, Haulage, and Appliances for same.*

1. What size steam-cylinders, also pump-rams, double-acting, would be required to deliver 1,000 gallons per minute against a head of 100 fathoms? Effective steam-pressure 60 lb. per square inch, and speed of rams 180 ft. per minute.
2. From a main haulage-way there are two haulage-roads branching off right and left. Describe, and show by sketches, how you would arrange the junction for dealing with a large output. Endless rope is the method of haulage.
3. A pair of winding-engines have cylinders 40 in. diameter and 6 ft. stroke; steam-pressure, 100 lb. per square inch. How many revolutions per minute will they be running when developing 1,200 horse-power?
4. In a mine with shafts 600 ft. deep it is proposed to instal endless-rope haulage: describe in detail and illustrate by sketches how you would carry out the work.
5. Describe the various systems of underground haulage, and point out the distinctive features of each; also sketch in detail the appliances of a balance jig in a steep seam.
6. Show by sketch how you would fix a 10 in. column of pipes in a shaft 500 ft. deep.
7. Enumerate what precautions and appliances you would adopt to reduce machinery accidents in shafts to a minimum.

SUBJECT 7.—*Geology, Surveying, and Making Plans.*

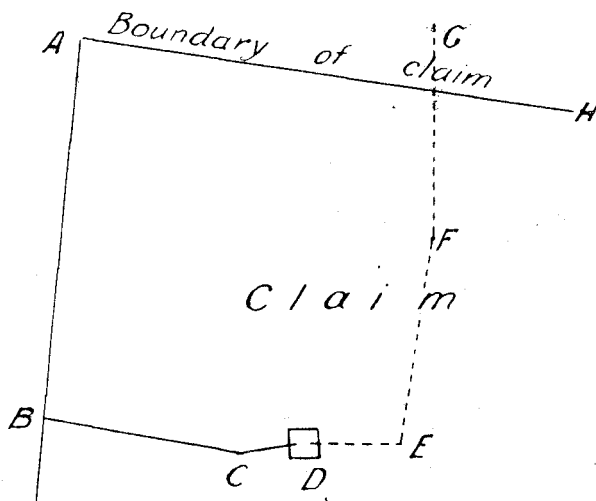
1. Give a brief description of any coalfield with which you are familiar, giving especial attention to the following points:—

- Extent of the seam.
- Inclination of the seam.
- Faults, if any.
- Nature of rocks overlying and underlying.
- Character of the coal.

2. Define the following terms:—

Anticline, overthrust fault, overlap, stratification, cleavage, jointing.

3. From the plan and particulars given below compute how many feet the working-face at G has encroached upon the adjoining claim, and what distance along the northern boundary from the corner of the claim marked A the working crosses the boundary.



Surface Traverse—

	Bearing.	Distance.
AB	182° 37'	1017 links.
BC	96° 48'	503 "
CD	77° 32'	175 "

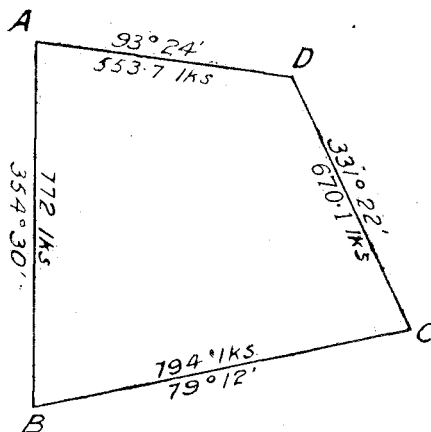
Underground Workings—

	Bearing.	Distance.
DE	89° 56'	174 feet.
EF	7° 26'	384 "
FG	356° 28'	259 "
AH	96° 0'	...

4. The underground workings of a mine are enclosed within the figure below, the co-ordinates from A being as follows:—

	S.	E.
A	0° 0'	0° 0'
B	768° 4'	74° 0'
C	619° 7'	853° 9'
D	31° 6'	532° 8'

Required the area in acres contained within the figure.



5. Compute the cubic contents of an ore-dump 27 ft. 6 in. by 16 ft. 9 in. at base, 18 ft. 4 in. by 7 ft. 5 in. at top, and 4 ft. 9 in. high; and how would you ascertain the approximate tonnage?

SUBJECT 8.—*Practical Elementary Electricity.*

1. In the application of electricity to mining, what dangers have to be guarded against, and what precautions are adopted to avoid same?
2. What is induction in electrical transmission, and the causes of same?
3. Describe a system of electric signalling in mines, and explain the causes which enable it to operate.
4. Give the definition of the following electrical terms :—
 - (a.) E.M.F.
 - (b.) Ampere.
 - (c.) Volt.
 - (d.) Ohm.
 - (e.) Switch.
 - (f.) Cut-out.
5. Describe the action of a continuous-current dynamo.
6. How is E.M.F. transmitted to operate machinery underground?
7. What is the horse-power of a dynamo developing 120 amperes at 220 volts?
8. If the E.M.F. in a circuit is 90 volts, and electricity is flowing round at the rate of 45 amperes, what is the total resistance of the current?

SUBJECT 9.—*Arithmetic, and a Knowledge of "The Coal-mines Act, 1908," and Amendments; also, First Aid to the Injured.*

1. A quantity of coal is standing in wagons ready for shipment; $\frac{1}{5}$ of it is owned by A colliery, $\frac{2}{5}$ by B, $\frac{1}{5}$ by C, $\frac{1}{15}$ by D, $\frac{1}{15}$ by E, and the remainder, which is 290 tons, by F: find the total quantity owned by each mine.
2. The daily output of a mine is 1,500 tons, 38 per cent. of which is small coal; 28 per cent. of the small is utilised for coke-making, yielding 65 per cent. of coke; the large coal is sold at 9s. 6d. per ton, the uncoked small at 3s. 9d. per ton, and the coke at 24s. 6d. per ton: what is the gross return upon a day's output?
3. A district of pillars measures 46 chains by 28 chains: how many tons of coal are contained therein if the seam be 7 ft. 6 in. high and 60 per cent. of the coal has been won? 30 cubic feet equal 1 ton.
4. A triangular reservoir, the sides of which are 8 chains, 6.75 chains, and 7.5 chains respectively, is filled with water to a depth of 15 ft.: how many gallons does it contain?
5. Twenty-four yards of roof in a 6-yard bord are brushed 6 ft. wide by 2 ft. high at the rate of 5s. per fathom: how many cubic yards of brushing are done, and what is the cost of same per ton of coal won? The seam is 4 ft. 6 in. high, and yields 1 ton to each 30 cubic feet.
6. Briefly state the requirements of "The Coal-mines Act, 1908," and its amendments, as to—
 - (a.) Ventilation.
 - (b.) Special rules.
 - (c.) Accidents in mines.
 - (d.) Persons employed in mines.
 - (e.) Ropes and chains.
 - (f.) Gunpowder and blasting.
 - (g.) Examination of mines.
7. State what ambulance training you have had, and what appliances should be kept in and about mines in case of accidents.
8. Describe how you would render first aid to a workman with a broken thigh.
9. Explain first-aid treatment and how you would act in cases of arterial bleeding, venous bleeding, and scalding.

EXAMINATION FOR SECOND-CLASS CERTIFICATES.

SUBJECT 1.—*Prospecting, Shaft-sinking, Tunnelling, and Opening out a Colliery.*

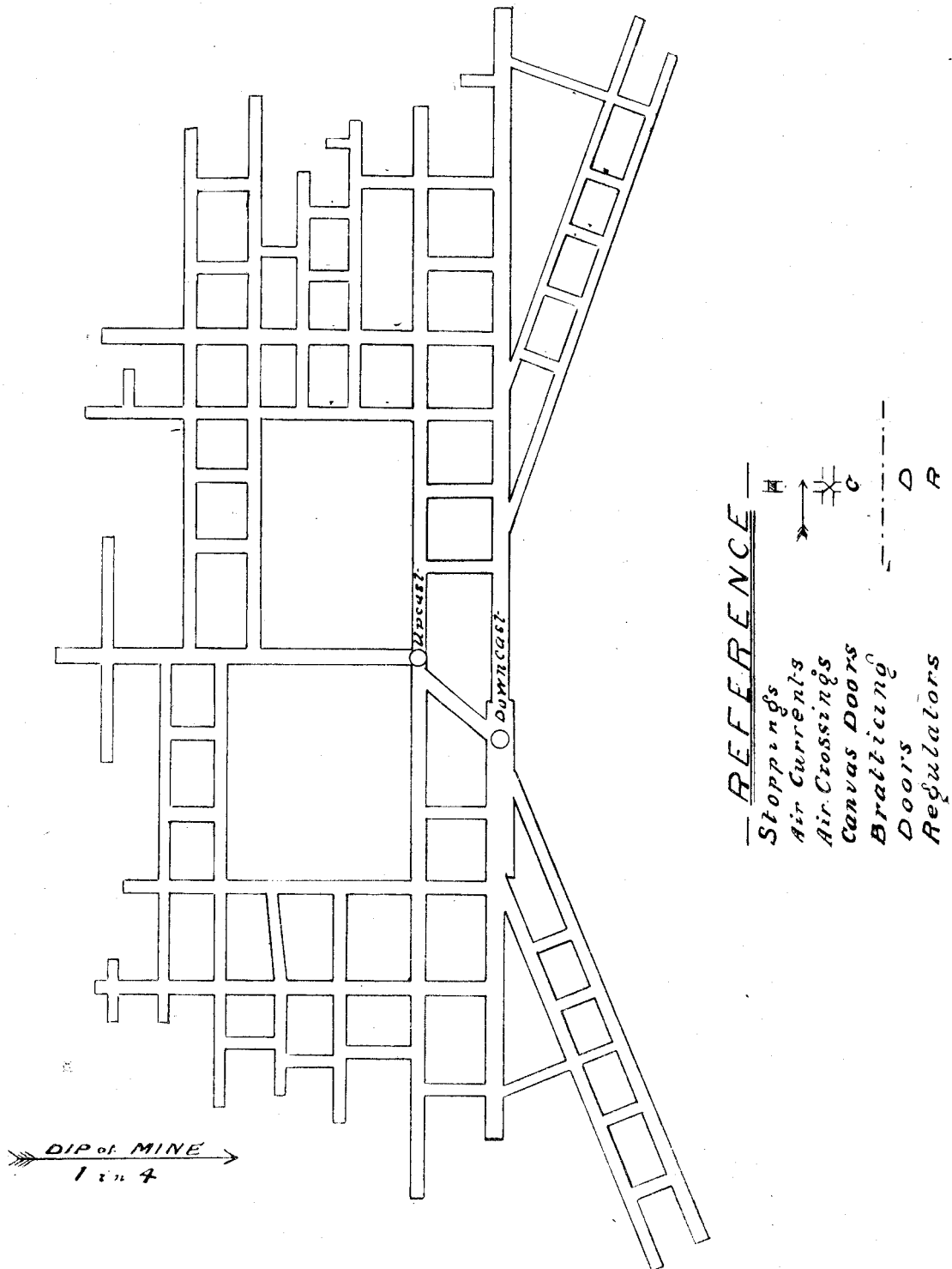
1. In prospecting a coalfield with no outcrops, what measures would you adopt to prove the seams?
2. Were you controlling sinking operations in a shaft, to what particular duties would you pay special attention?
3. Having sunk two shafts to a seam of coal, show by sketch how you would arrange your shaft-pillars, and state how you would ventilate your headings until the connection made between the shafts.

SUBJECT 2.—*Working of Coal and timbering underground.*

1. Describe the different systems of working coal, and show by sketches the methods of securing working-faces.
2. In driving a winning-place a soft dyke 15 ft. thick is met with: explain how you would secure this place permanently.
3. Describe how you would secure permanently a shaft siding 18 ft. by 8 ft. Give your ideas of the sizes of the material to be used.
4. How would you extract pillars, with a moderately soft roof, at a depth of 500 ft.?

SUBJECT 3.—*Gases of Mines, Spontaneous Combustion, and Ventilation.*

1. Name the gases usually met with in coal-mines, with their respective peculiarities.
2. In securing adequate ventilation in a very gaseous mine, what are the chief points for consideration?
3. What are the indications of spontaneous combustion; and, having found a fire resulting from such in a disused part of the mine, how would you deal with it, the safety of the men engaged at the work having the first consideration?
4. Ventilate the attached plan, using the reference signs thereon to indicate your method.
5. What steps would you take if you were in charge of a working-district giving off gas and a sudden stoppage of the air-current took place?
6. If the anemometer registered 350 revolutions per minute in an airway 12 ft. by 7 ft., what total quantity of air would be passing?
7. What are the advantages of splitting air-currents, and, in your opinion, what is the best way of doing so?



SUBJECT 4.—*Dealing with Old Workings and other Sources of Danger.*

1. What precautions would you take in approaching old workings which may contain gas and water under high pressure?
2. If there were indications of creep over a section of the workings, how would you proceed to check it and secure safety to the miners?
3. What provision would you make to guard against fires in a dry and dusty mine in which naked lights are used?
4. What measures would you adopt to guard against blown-out shots, and what great danger is to be apprehended from such shots?
5. What explosives would you use, and what regulations would you enforce, when firing shots in a seam of coal that gives off explosive gas and is dusty also?
6. What is the effect of sediment, or incrustation, forming in a steam-boiler, and what damage is likely to result therefrom?

SUBJECT 5.—*Mine Drainage and Haulage, and Appliances for same.*

1. Explain the action and working of a ram pump, and mention some of the advantages attaching to its use.
2. Describe the various motive powers for driving pumps underground, and explain the method of their application.
3. What is the difference between the main- and tail-rope system and the endless-rope system of haulage? Give a sketch showing an arrangement for taking up slack rope in connection with the latter system.
4. Sketch and describe types of automatic points and self-acting chocks for self-acting inclines.
5. Describe, and show by sketch, the appliances you would erect to lower 300 tons of coal in eight hours down an incline 12 chains long, with a grade of 1 in 6.

SUBJECT 6.—*Practical Elementary Electricity.*

1. Enumerate the various applications of electricity to mining.
2. Explain, as detailed as you can, a chemical battery, such as is used for producing electricity for signalling purposes.
3. Describe the application of electricity to shot-firing.
4. What do you understand by the terms "volt" and "ampere"?

SUBJECT 7.—*Arithmetic, and a Knowledge of "The Coal-mines Act, 1908," and its Amendments; also, First Aid to the Injured.*

1. For a fortnight's work two men get 165 tons 10 cwt. at 1s. 11d. per ton, 12½ yards at 4s. per yard, and truck ninety-eight tubs at 2s. 9d. per score: what amount is due to them?
2. How many bricks would be required to put in twelve stoppings 9 in. thick, average size of each opening 9 ft. by 6 ft.?
3. An airway is half a mile long, 7 ft. high, and 10 ft. wide: what is the rubbing-surface in square feet?
4. How many gallons will a water-tank hold whose diameter is 4 ft. and depth 8 ft.?
5. How many 7-yard rails, weighing 30 lb. to the yard, would it take to lay a double tramway in a main road 1 mile 2 ch. 16 yd. long, and what would be the cost of rails at £8 per ton?
6. Briefly state the requirements of the Coal-mines Act and amendments as to—
 - (a.) Ventilation.
 - (b.) Examination of mine.
 - (c.) Mines liable to flood.
 - (d.) Signalling.
 - (e.) Securing of shafts.
 - (f.) Gunpowder and blasting.

First Aid.

1. What experience have you had in ambulance-work?
2. How would you render first aid to a workman with a compound fracture of a leg?
3. How would you treat a person with injured hand, the fingers cut and bleeding profusely?
4. What treatment would you give a workman scalded by steam?

LIST OF PERSONS WHO HAVE OBTAINED CERTIFICATES AS MINE-MANAGERS UNDER THE COAL MINES ACTS.

FIRST-CLASS MINE-MANAGERS' CERTIFICATES.

Issued under the Coal-mines Acts, 1886 and 1891.

Aitken, T., Wendon.	Gray, J., Abbotsford.	*Redshaw, W., Whangarei.
Alexander, T., Brunnerton.	*Harrison, J., Brunnerton.	Reed, F., Westport.
Austin, J., Sheffield.	Irving, J., Kaitangata.	*Richardson, D., Abbotsford.
Binns, G. J., Dunedin.	Jemison, W., Waimangaroa.	Shore, J., Kaitangata.
Bishop, J., Brunnerton.	Kenyon, J., Shag Point.	Shore, T., Orepuki.
*Brown, T., Westport.	Kerr, G., Kamo.	*Shore, W. M., Kaitangata.
Brown, T., Glentunnel.	Lindsay, W., Otago.	*Smart, W., Christchurch.
Cameron, J., Denniston.	Lloyd, J., Invercargill.	Smith, A. E., Nelson.
Campbell, J. C., Fairfield.	*Louden, J., Green Island.	Smith, T. F., Nelson.
Cochrane, N. D., Dunedin.	Love, A., Whangarei.	Sneddon, J., Mosgiel.
Collins, W., Taupiri.	Mason, J., Nightcaps.	Swinbanks, J., Kawakawa.
Dando, M., Brunnerton.	May, J., Greymouth.	Taylor, E. B., Huntly.
*Elliott, R., Wallsend.	Moody, T. P., Kawakawa.	Thompson, A., White Cliffs.
Ferguson, A., White Cliffs.	Moore, W. J., Springfield.	Walker, J., Collingwood.
*Freeman, J., Green Island.	Nelson, J., Green Island.	Williams, W. H., Shag Point.
*Geary, J., Kamo.	Ord, J., Huntly.	

First-class Certificates issued under the Coal-mines Acts, 1886, 1891, and 1905, after Examination.

Armitage, F. W., Auckland.	Fletcher, James, Granity.	McCormack, W., Denniston.
Armstrong, J., Brunnerton.	Fry, Sydney, Waimangaroa.	McEwan, Robert, Coromandel.
Barclay, T., Kaitangata.	Gibson, John, Westport.	McGeachie, J., Mokau.
Barclay, W., Kaitangata.	Gillanders, A., Shag Point.	Milligan, N., Westport.
Bennie, Boyd, Waihi.	Gowans, W., Millerton.	Morgan, Wm., Waihi.
Brown, J. C., Denniston.	Green, E. R., Abbotsford.	Murray, T., Westport.
Campbell, Peter, Fairfield.	Green, J., Brunnerton.	*Newsome, F., Denniston.
Carruthers, J., Shag Point.	Hamilton, J. S., Burnett's Face.	Newton, James, Brunnerton.
Carson, W., Kaitangata.	Herd, J., Brunnerton.	Shore, Joseph, Kaitangata.
Coombe, J., Waihi.	Hill, Robert, Abbotsford.	Smith, George, Fairfield.
Coulthard, J., Taylorville.	Hosking, G. F., Auckland.	Sowerby, H., Denniston.
Dixon, C. W., Granity.	*Hughes, D., Preservation Inlet.	Tattley, E. W., Huntly.
Dixon, W., jun., Kaitangata.	Jebson, D., Canterbury.	Tattley, F. J., Mercer.
Duggan, George, Burnett's Face.	Johnson, W. P., Thames.	Taylor, A. H., Waikato.
Dunn, Andrew, Denniston.	Leitch, J., Blackball.	Thomson, Thomas, Denniston.
Dunn, W., Brunnerton.	Leitch, W., Blackball.	Turner, G. F., Shag Point.
Dunn, W. R., Thames.	Marshall, A. G., Denniston.	Westfield, C. H., Fairfield.
Elliott, R., jun., Denniston.	McCaffrey, Patrick, Fernstown.	Young, James H., Waimangaroa.
Fleming, J., Kaitangata.		

Mine-managers' Certificates, issued under "The Coal-mines Act, 1886," on Production of English Certificate.

Binns, G. J., Dunedin.	*Garrett, J. H., Auckland.	Macalister, J., Invercargill.
Black, T. H., Waipori.	Hayes, J., Kaitangata.	*Nimmo, J., Oamaru.
Broome, G. H., Ngakawau.	Hodgson, J. W., Ross.	*Straw, M., Westport.
Cater, T., Auckland.	*Lindop, A. B., Springfield.	Tattley, W., Auckland.
Cochrane, N. D., Dunedin.		

First-class Mine-managers' Certificates, issued to Inspectors of Mines by virtue of Office, under the Coal-mines Acts of 1886 and 1891.

*Coutts, J., Thames.	*Gow, J., Dunedin.	*Wilson, G., Thames.
Gordon, H. A., Wellington.	McLaren, J. M., Thames.	

*Mine-managers' Certificates, issued under the Coal-mines Acts of 1891 and 1905, on Production of Certificate from a recognised Authority outside the Dominion.**First Class.*

Alison, R., Greymouth.	James, Isaac Angelo, Westport.	*Scott, Joseph, Ngahere.
Dixon, J., Westport.	*Jordan, R. [S., Kaitangata.	Tennent, R., Brunnerton.
Fletcher, George, Westport.	Kirkwood, D., Coromandel.	Twining, C. E., Dunedin.
Frame, Joseph, Kaitangata.	Lewis, W., Blackball.	Watson, James, Greymouth.
Goold, A. L., Auckland.	Pollock, James, Green Island, Otago.	Wight, E. S., Auckland.
Irvine, James, Dunedin.	*Proud, Joseph, Wanganui.	Wood, William, Mokihinui.

Second Class.

Dickinson, W., Gore.	Inglis, A., Huntly.	Longstaff, H. C., Kaitangata.
Dowgray, R., Granity.	Lennox, W., Springfield.	McCall, John, Wellington.
Greenwell, R., Huntly.	Little, W., Wellington.	McGeachie, J., jun., Mokau.
Grenall, S., Granity.	Littlewood, G. G., Denniston.	

SECOND-CLASS MINE-MANAGERS' SERVICE CERTIFICATES.

Issued under "The Coal-mines Act, 1891."

Carson, M., Kaitangata.	Love, Alexander, Orepuki.	*Ross, John, Kawakawa.
Collier, Levi, Kamo.	McIntosh, Allan, Shag Point.	Sara, James, Reefton.
Clarke, Edward, Shag Point.	McLaren, J. M., Thames.	Smith, Charles, Whangarei.
Elliot, Joseph, Coal Creek.	Marshall, J., Ngakawau.	Thomas, James, Springfield.
Harris, John, Denniston.	Murray, Thomas, Denniston.	Wallace, William, Huntly.
Herd, Joseph, Brunnerton.	*Nimmo, George Stewart, Ngapara.	Willetts, John, Papakaio.
Howie, James, Kaitangata.	Radcliffe, William, Reefton.	*Willetts, John Morris, Papakaio.
Leeming, William, White Cliffs.	*Roberts, John, Brunnerton.	Young, William, Waimangaroa.
Lobb, Joseph, Mokau.		

* Deceased since issue of certificates.

Second-class Certificates issued under the Coal-mines Acts, 1886, 1891, 1905, and 1908, after Examination.

Austin, W. B., Sheffield.	Doel, G., Lovell's Flat.	McLelland, A. C., Kaitangata.
Barber, John, Shag Point.	Duncan, James, Kaitangata.	McNeill, D., Fairfield.
Barclay, T., Kaitangata.	Duncan, J. E., Kaitangata.	Mills, Walter, Huntly.
Barclay, T., jun., Kaitangata.	Duncan, John, Lovell's Flat.	Neilson, Moffat, Abbotsford.
Barclay, Wm., Kaitangata.	Fox, R. A., Blackball.	Ogilvie, W. W., Saddle Hill.
Barnes, A. E., Shag Point.	Harris, A., Saddle Hill.	Orr, Hugh, Fairfield.
Brown, Robert, Kaitangata.	Heycock, C. R., Nightcaps.	Parcell, W., jun., Bannockburn.
Cadman, J., Hikurangi.	Hill, R., Abbotsford.	Penman, C. P., Kaitangata.
Campbell, Peter, Fairfield.	Hodson, John, Kaitangata.	Price, F. J., Burnett's Face.
Carruthers, J., jun., Nightcaps.	Holden, J., Nightcaps.	Scoble, E. J., Blackball.
Charles, E., Glentunnel.	Hunter, A., Southland.	Snow, T., Mercer.
Cherrie, R. C., Mokau.	Kells, F. H., Denniston.	Tattley, F. J., Mercer.
Christie, James, Saddle Hill.	Lewis, David, Puponga.	Taylor, Joseph, Collingwood.
Clemon, G., Whangarei.	Lewis, J., Nightcaps.	Thompson, Joseph, Blackball.
Craig, John, Coal Creek Flat.	Lindsay, J. B., Orepuki.	Waldie, A. B., Mokau.
Dale, E. G., Kaitangata.	McAllister, Neil, Kaitangata.	Westfield, O., Fairfield, Otago.
Dixon, W., jun., Kaitangata.	McLelland, J., Kaitangata.	Whittleston, A. W., Shag Point

ANNEXURE C.

STATISTICS OF WORKINGS IN COAL-MINES, 1908.

Name of Mine and Locality.	Name of Manager.	Number of Years worked.	Quality of Coal.	No. of Seams worked.	Thickness of Seams.	Thickness worked.	Dip of Seam.	System of Underground Working.	Number of Shafts.	Dimensions of Shafts.		Output delivered by	Output for 1908.			Approximate Total Output to 31st December, 1907.	Approximate Total Output to 31st December, 1908.	Number of Men ordinarily employed.			Power used for drawing Mineral.	Pumps.			Means of Ventilation.	Date of Inspector's Last Visit.
										Size of Shaft or Adit.	Depth of Shaft or Length of Adit.		Coal.	Slack.	Total.			Above.	Below.	Total.		Stroke.	Size of Barrel.	Height of Column.		

NORTHERN INSPECTION DISTRICT.																										
KAWAKAWA DISTRICT.																										
Kawakawa Mine ..	Neill, S.	10	semi-bitum.	..	6'	6'	1 in 3	bord and pillar	1 15' 6" x 3' 6"	200'	adit	Tons. 980	..	980	..	Tons. 72,432	73,412	2	3	5	..	..	..	..	8/12/08	
Kihinikau Syndicate ..	..	..	ditto	..	..	..	..	..	..	..	..	..	..	500	..	..	500	..	2	2	..	..	..	..	5/12/08	
HIKURANGI DISTRICT.																										
Hikurangi Mine ..	Dunn, W. R.	16	"	1 7' to 12'	7' to 10' 6"	1 in 6	1 in 6	bord and pillar	3 6' x 8'	758'	adit	61,071	..	61,071	..	520,522	581,593	9	65	74	horse and steam	16" 10" 35'	10" 8" 35'	35'	4/12/08	
Northern Collieries ..	Morgan, Wm.	11	"	1 15' to 8' 6"	5' to 8' 6"	1 in 10	1 in 10	ditto	5 9' x 6'	1,850'	"	50,275	..	50,275	..	233,971	284,246	7	67	74	ditto	free drainage	free drainage	"	7/12/08	
NGUNGURU DISTRICT.																										
Kiripaka Colliery ..	Tattley, E. W.	9½	"	1 11' 3" to 20'	11' to 18'	1 in 6	1 in 6	"	2 9' x 6' 8' x 6'	980'	"	34,579	..	34,579	..	128,870	163,449	18	50	68	steam	8" 6" 159'	5" 3" 30'	159'	3/12/08	
WAIKATO DISTRICT.																										
Taupiri Extended ..	Wood, W.	20½	brown	1 11' 0" to 30'	20'	20'	1 in 10	"	2 10' diam.	166'	shaft	62,294	15,168	77,462	830,301	907,763	32	140	172	"	12"	5" 204'	5" 204'	fan	27/11/08	
Taupiri Reserve ..	"	21½	"	1 11' 0" to 24'	18'	18'	1 in 8	"	1 8' x 6'	208'	"	5,714	880	6,544	322,943	329,487	3	9	12	"	12"	7" 220'	7" 190'	steam-pipes	17/7/08	
Ralph's Taupiri ..	Wight, E. S.	18½	"	1 11' 0" to 50'	20'	20'	1 in 10	"	2 9' 5" x 5' 8' 6" diam.	100'	"	69,030	22,741	91,771	571,341	663,112	34	139	173	"	12"	5" 260'	5" 260'	fan	15/10/08	
Taupiri West ..	McEwan, R.	1½	"	1 14' to 24'	7' to 10'	10'	1 in 7	"	1 9' 6" x 5' 6" diam.	250'	"	91	..	91	..	..	91	..	2	2	oil engine	12"	5" 130'	5" 130'	natural	..
Taupiri South ..	Leather, W. R.	6½	"	1 18' to 24'	12'	12'	1 in 7	"	2 6' x 6' 6' x 6'	300'	adit	200	..	200	..	20,673	20,873	3	2	5	horse	..	..	..	..	27/11/08
MIRANDA DISTRICT.																										
Union Collieries ..	Tattley, F. J.	7	"	1 57'	20' to 30'	20' to 30'	varied	"	1 4' x 4' 6' x 6'	links 90'	"	14,876	..	14,876	..	72,153	87,029	12	15	27	steam	12" 18" 7½"	6" 6" 90'	90'	exhaust steam	16/10/08
DRURY DISTRICT.																										
Drury Mine ..	Holden, James	4	"	1 14'	7'	7'	1 in 5	"	1 5' x 6'	756'	"	565	24	589	24	1,493	2,082	..	5	5	manual	..	..	..	natural	17/10/08
MOKAU DISTRICT.																										
Mangapapa Mine ..	Lennox, Wm.	24	"	1 6' to 8'	6' to 8'	6' to 8'	1 in 10	"	1 9' x 6'	1,752'	"	5,989	..	5,989	..	52,966	58,955	2	13	15	horse	..	..	..	furnace	6/6/08
Output of mines included in previous statements at which operations are suspended																	1,633,406	1,633,406	..	..	..	..	..	..	..	..

WEST COAST INSPECTION DISTRICT.

COLLINGWOOD.

COLLINGWOOD.	Pakawan ..	McCaffrey, P. ..	3 bitum.	1	3' 3"	all	1 in 3½	longwall	1	8' x 7' (tunnel)	13-5 ch.	adit	194	234	428	7,418	7,846	4	7	11	horse	Hand pump	..	natural	..	
	Puponga ..	Taylor, A. H. ..	5 "	1	3' to 6'	all	1 in 3	bord and pillar	..	9' x 6' 6"	1,254'	adit	5,533	..	5,533	67,188	72,721	18	26	44	steam	12" 9" 8" 6"	360' fan	Hayes fan	..	
WESTPORT.	Seddonville State Colliery ..	Fletcher, James ..	5 "	1	12'	8'	variable	ditto	1	6' x 12' (shaft) 7' x 10' (tunnel)	150' 72 ch.	endless rope	33,947	21,284	55,231	154,179	209,410	25	75	100	"	Free drain	age	fan	..	
	Westport-Stockton	Marshall, A. G. ..	1 ½	"	1 6' to 20'	8'	variable	"	..	8' x 7'	3,500'	electric locomotives and endless rope	2,561	706	3,267	..	3,267	60	90	150	electric	Free drain	age	fan	..	
	Millerton ..	McCormick, Wm. ..	17 "	"	1 4' to 40'	12	variable	"	..	10' x 6' 10' x 6' 11' x 7' 12' x 7' 8' x 8' 9' x 6'	33 ch. 45 ch. 19 ch. 9 ch. 125 ch. 38 ch.	endless rope	265,807	51,294	316,601	2,334,460	2,651,061	126	347	473	gravity	Two drains drives	1 Hayes fan 1 Schiele fan 1 Sirocco fan 1 Hayes fan	..		
	Coalbrookdale, Denniston	Dixon, C. W. ..	28 "	"	2 3' to 18'	all	variable	"	..	8' x 6' 8' x 6' 9' x 6'	138 ch. 19 ch.	ditto	..	..	806	4,781	5,587	..	2	2	271	steam	Free drain	age	Hayes fan	..
	Ironbridge, Denniston	Thomson, Thomas ..	17 "	"	2 3' to 20'	all	variable	"	..	8' x 6' 8' x 6'	138 ch. 19 ch.	"	..	..	460	6,310	6,770	..	2	2	For both mines	at Den nis ton	..	Schiele fan	..	
	BULLER ROAD.	Burley, W. D. ..	13 brown	"	1 16' to 18'	9'	1 in 4	"	..	10' x 7'	250'	adit	806	..	..	..	..	..	2	2	2	Free drain	age	natural	..	
	White Cliffs	Burley, J. ..	8 "	"	2 4' and 2'	all	1 in 10	longwall	..	6' x 5'	1,700'	"	460	..	..	6,310	6,770	..	2	2	"	Free drain	age	"	..	
THREE-CHANNEL FLAT.	Flaxbush ..	Archer, F. W. ..	14 semi-bitum.	"	2 10' and 12'	9'	1 in 7	bord and pillar	..	7' x 5'	750'	"	960	..	..	960	11,741	12,701	2	2	4	Free drain	age	"	22/12/08	
	Boatman's.	Coghlan, John ..	12 bitum.	"	1 12'	8'	1 in 3	ditto	..	6' x 4'	400'	"	61	201	..	262	2,046	2,508	..	1	1	"	Free drain	age	"	..
	Ooghlan's Freehold	..	7 brown	"	1 12' to 14' 10' to 12'	all	1 in 6	"	..	9' x 8'	No. 1,500' No. 2,200' No. 3,180' No. 4,160' No. 5,130' No. 128'	"	248	..	..	248	6,141	6,389	1	2	3	horse	Free drain	age	"	..
REEFTON.	Burke's Creek	Cairns, R. ..	7 "	"	1 10'	6'	1 in 4	"	..	6' x 5'	..	"	718	..	..	463	1,181	..	2	2	2	Free drain	age	"	..	
	Lockington's Mine, Burke's Creek	Lockington, E. ..	7 "	"	1 10'	all	variable	open face	..	..	..	adit	117	1,018	1,135	23,567	24,702	2	..	2	..	..	..	"	..	
	Murray Creek	Billett, James ..	29 bitum.	1	12'	all	variable	pillar	..	5' 6" x 4' 6"	250'	"	950	..	..	950	23,873	24,823	..	3	3	3	Free drain	age	"	..
	Phoenix and Venus, Murray Creek	Knight, John ..	27 "	2	10'	8'	1 in 2	bord and pillar	..	6' x 4'	600'	"	267	459	..	726	2,693	3,419	..	2	2	"	Free drain	age	"	..
	Reefton	Harris, John ..	6 brown	1	5'	4'	1 in 5	ditto	..	12' x 8'	640'	"	676	..	..	676	2,143	2	2	4	"	Free drain	age	"	..	
	Waitahu ..	O'Donnell, James ..	6 semi-bitum.	2	12' and 6'	8' and 6'	1 in 4	"	..	6' x 4'	500'	"	673	279	..	952	10,528	11,480	..	3	3	"	Free drain	age	"	..
	Lankey's Creek	Pascoe, Simon ..	6 "	1	8'	6'	1 in 25	"	..	6' x 4'	200'	"	2,801	..	..	2,801	27,415	30,216	1	5	6	horse	Free drain	age	"	..
	Progress ..	Kearns, R. L. ..	11 pitch	1	4'	4'	1 in 5	"	..	6' x 4'	200'	"	2,801	..	..	2,801	27,415	30,216	1	5	6	horse	Free drain	age	"	..

STATISTICS OF WORKINGS IN COAL-MINES, 1908—continued.

Name of Mine and Locality.	Name of Manager.	Number of Years worked.	Quality of Coal.	No. of Seams worked.	Thickness of Seams.	Thickness worked.	Dip of Seam.	System of Underground Working.	Number of Shafts.	Dimensions of Shafts.		Output delivered by	Output for 1908.			Approximate Total Output to 31st December, 1907.	Approximate Total Output to 31st December, 1908.	Number of Men ordinarily employed.			Power used for drawing Mineral.	Pumps		Means of Ventilation.	Date of Inspector's Last Visit.
										Size of Shaft or Adit.	Depth of Shaft or Length of Adit.		Coal.	Slack.	Total.			Above.	Below.	Total.		Stroke.	Size of Barrel.		
WEST COAST INSPECTION DISTRICT—continued.																									
GREYMOUTH.																									
Paparoa..	Watson, J. C.	18	bitum.	2	17'	15'	1 in 6	bord and pillar	9' x 6'	1,232'	adit	74,822	10,526	85,348	941,207	1,026,555	6	44	50	steam	Free drain	..	fan	..	..
Blackball ..	Clark, W.	..	..	..	..	..	..	ditto	10' x 7'	600'	..	..	..	..	..	..	..	..	..	..	Free drain	..	natural	..	..
Brunner ..	Armstrong, J.	44	"	1	12'	all	1 in 4	..	6' x 4'	30'	"	6,443	8,850	15,293	2,172,940	2,188,233	10	40	50	steam	Free drain	..	..	..	..
Tyneside, Brunnerton	Armstrong J.	26	"	1	12'	all	1 in 4	"	10' diameter	103'	shaft	33,372	6,932	40,304	254,755	295,059	40	120	160	Mine	flooded and abandoned	June, '08.	..	..	..
Thornton's Lease ..	Boustridge, T. H.	44	..	1	8'	8'	1 in 5	bord and pillar	10' x 7'	726'	..	Under development	172,951	61,299	234,250	561,208	795,458	..	12	12	steam	No. 1, 13"	390' ram	..	..
Point Elizabeth State Mine..	Herd, Joseph, and Coulthard, John	..	bitum.	..	..	..	..	..	(No. 1) 792'	792'	endless rope	..	..	..	..	..	82	318	400	..	No. 2, 13"	420' ram	..	..	..
Output of mines included in previous statements at which operations are suspended												..	..	..	1,172,480	1,172,480									

SOUTHERN INSPECTION DISTRICT.

CANTERBURY.																								
Springfield, Springfield	Taylor, James (permit)	32	brown	1	1' 8"	all	1 in 6	bord and pillar	6' x 4'	80'	tunnel	312	..	312	90,127	90,439	1	3	4	steam	direct acting steam	..	exhaust steam from pump	8/12/08
Springfield Fireclay - works, Springfield	Peters, Robert	8	fireclay	1	2'	"	1 in 6	ditto	14' 6" x 3'	50'	adit	..	..	..	472	472	1	2	3	horse	steam	..	ditto	9/12/08
Homebush, Glentunnel	Campbell, H.	36	brown	2	5' & 7'	"	1 in 3	"	14' 6" x 3' 6"	80'	tunnel	12,735	1,021	13,756	212,082	225,838	6	35	41	steam & horse	..	..	..	8/12/08
St. Helen's, White Cliffs	Thin, W. (permit)	27	"	4	8' 4' 6"	"	1 in 3	pillar, slope, and wall	14' x 3' 6"	80' 5 ch.	adit	1,561	..	1,561	16,372	17,933	1	4	5	steam	..	..	..	8/12/08
Mount Somers, Mount Somers	Thompson, A.	7	"	1	20'	10'	..	bord and pillar	5' x 4'	25'	"	2,230	682	2,912	24,244	27,156	2	8	10	horse	..	..	..	13/12/08
Woolshed Creek, Mount Somers	Harris, A. E. (permit)	44	"	1	40'	15'	1 in 9	ditto	7' x 6'	10 ch.	..	1,752	..	1,752	56,074	57,826	2	4	6	"	..	..	..	13/12/08
Te Moana, Geraldine	Crowe Bros.	2	"	1	..	5'	1 in 3	"	..	..	..	110	..	110	30	140	..	2	2	..	..	..	..	18/4/08
Albury, Albury	Kidd, G. C. (permit); Riddle, C. E. (owner)	17	"	1	10'	7'	1 in 1	bord and pillar	14' x 3' 6"	68'	adit	827	..	827	8,827	9,654	1	2	3	horse	..	..	..	17/7/08

Waihae Forks, Waihae Forks	Lomas, G. (permit)	16	lignite	1	6'	5'	all	1 in 6	ditto	5' x 4'	100'	"	435	2,567	3,002	1	2	3	steam	pump	"	16/7/08
Waihae, Waihae Forks	Allen, Alexander	19	"	1	7'	5'	all	1 in 6	"	5' x 4'	260'	"	38	2,042	2,080	..	2	2	hand	"	"	16/7/08
Elephant Hill, Waihae Downs	Richards, E.	40	brown	1	14'	8'	8'	1 in 6	"	6' x 5'	20 ch.	"	40	628	668	..	1	1	"	"	"	10/12/08
<i>Private Pits.</i>																						
Snowdon, Rakai Gorge	Gerard, G.	21	"	1	14'	8'	8'	1 in 3	narrow	4' x 4'	90'	shaft	..	1,808	1,808	..	..	..	"	"	"	..
Craigieburn, West Coast Road	Manson, D.	12	"	1	..	..	..	..	open	..	..	open	45	378	423	..	..	..	"	"	"	..
<i>NORTH ORAGO.</i>																						
Dalgaty, Hakatarama	Drysdale, J.	27	"	1	30'	..	..	semi-vertical	bord and pillar	..	..	adit	183	2,637	2,820	..	1	1	horse	"	natural	..
Wharekuri, Wharekuri	Shanks, A.	..	"	1	40'	13'	13'	vertical	levels	..	..	dip drive	62	2,517	2,579	..	1	1	hand	"	"	11/12/08
Kurou, Kurou	Sanderson, J.	12	"	1	indefinite	30'	30'	"	stopping	8' x 6'	20'	"	368	3,217	3,585	..	1	1	horse	"	"	11/12/08
Otiake, Otiake	Taylor, George	5	"	1	18'	12'	12'	"	..	6' x 5'	200'	adit	22	256	278	..	1	1	..	"	"	..
St. Andrew's, Papakaio	Nimmo, T. (permit)	30	"	1	7'	6'	6'	1 in 4	bord and pillar	4' x 3'	60'	"	1,719	39,620	41,339	1	4	5	horse	"	furnace	11/12/08
Prince Alfred, Papakaio	Willetts, G. H.	39	"	1	1' to 9'	all	all	1 in 9	ditto	4' x 3'	51'	"	692	52,710	53,402	2	3	5	"	"	natural	11/12/08
Ngapara, Ngapara	Nimmo, W. (permit)	30	"	1	25'	8'	8'	1 in 17	"	5 1/2' x 6'	5 ch.	"	953	24,287	25,240	1	2	3	"	"	"	15/7/08
Shag Point, Shag Point	Hunt, W. (permit)	38	pitch	1	2' 6"	all	all	..	"	5' x 4'	5 ch.	"	310	404,851	405,287	1	2	3	hand	"	"	9/10/08
Allandale, Shag Point	McIntosh, A.	21	"	3	4' 6'	"	"	1 in 4	bord and pillar & longwall	2 10' x 6'	1,000'	inclined tunnel	8,974	291,443	306,665	7	36	43	steam & electric	electric centrifugal	fan	29/10/08
<i>SOUTH ORAGO.</i>																						
Fernhill, Abbotsford	Gray, J.	31	brown	1	19'	10'	10'	1 in 10	bord and pillar	4 1/2' x 4 1/2'	50'	level	408	145,470	146,909	6	5	11	horse	"	natural	29/12/08
Freeman's, Abbotsford	Gillanders, A. S.	28	"	2	7' to 14'	all	all	1 in 7	ditto	5' x 4'	150'	dip incline drive	18,018	363,972	384,730	7	34	41	steam & horse	"	furnace	29/12/08
Green Island, Green Island*	Barclay, jun., T.	21	"	1	14'	10'	10'	1 in 10	"	..	..	adit	1,652	643	2,295	2	2	4	steam	Tangye	natural	26/5/08
Jubilee, Saddle Hill	Barclay, T.	11	"	1	17'	all	all	1 in 10	"	2' 4' x 3'	150'	"	17,814	127,185	148,992	7	25	32	steam & horse	"	furnace	30/12/08
Burnwell, Saddle Hill	Harris, A.	27	"	1	20'	10' to 15'	10' to 15'	1 in 9	"	1' 6' x 5'	20 ch.	tunnel	3,023	62,502	65,525	2	4	6	ditto	"	natural	30/12/08
Saddle Hill (No. 1), Saddle Hill	Ogilvie, W.	36	"	1	22'	20'	20'	1 in 10	"	4' 5' 10' x 4' 6'	100'	inclined drive	2,995	168,731	176,981	3	11	14	"	"	furnace	30/12/08
Saddle Hill (No. 2), Saddle Hill	Hill, Robert	7	"	1	22'	10'	10'	1 in 14	"	1	..	adit	4,592	84,573	104,015	10	20	30	"	"	"	30/12/08
Lauriston, Brighton	Walker, James	22	"	1	6'	5' 6"	5' 6"	variable	"	1	48'	tunnel	170	7,180	7,350	1	1	2	horse	"	natural	3/9/08
Brighton, Brighton	McColl, D. L.	20	"	1	5'	all	all	1 in 20	"	1' 4' x 3'	48'	"	191	2,483	2,674	1	1	2	hand	"	"	3/9/08
Ferndale, Taiari Mouth	Fairbairn, R.	25	"	1	10'	8'	8'	..	"	10' x 8'	100'	"	54	803	857	..	1	1	"	"	"	..
Real Mackay, Milton	Bruce, Railway	4	"	1	8'	6'	6'	1 in 7	"	..	7 ch.	adit	4,099	19,660	25,385	2	4	6	steam	"	"	22/12/08
Waronui, Milton	Carruthers, James	4	"	1	14'	7'	7'	1 in 7	"	1' 6' x 6'	40 ch.	level	9,934	27,873	40,050	16	27	43	steam & horse	"	furnace	22/12/08
Wallsend, Lovell's Flat	Hewitson, R.	38	lignite	1	20'	all	all	..	open	..	..	open	48	11,491	11,589	1	..	1	hand	"	..	..
Benhar, Stirling	McSkimming, P.	45	"	1	20'	12'	12'	..	bord and pillar	4' x 4'	50'	inclined	2,797	115,287	121,887	1	4	5	steam	"	natural	20/8/08
Mount Wallace, Stirling	Park, F. (permit)	14	"	1	20'	11'	11'	..	ditto	6' x 6'	5 ch.	adit	570	7,322	8,055	..	1	1	horse	"	natural	30/8/08

* Prior to 1890 this mine had produced 108,198 tons, which are included in the additions at end of statement.

STATISTICS OF WORKINGS IN COAL-MINES, 1908—continued.

C.—3A.

Name of Mine and Locality.	Name of Manager.	Number of Years worked.	Quality of Coal.	No. of Seams worked.	Thickness of Seams.	Thickness worked.	Dip of Seam.	System of Underground Working.	Number of Shafts.	Dimensions of Shafts.		Output delivered by	Output for 1908.		Approximate Total Output to 31st December, 1907.	Approximate Total Output to 31st December, 1908.	Number of Men ordinarily employed.		Power used for drawing Mineral.	Pumps.		Means of Ventilation.	Date of Inspector's Last Visit.											
										Size of Shaft or Tunnel.	Depth of Shaft or Length of Tunnel.		Coal.	Slack.			Total.	Above.		Below.	Stroke.			Height of Column.										
SOUTHERN INSPECTION DISTRICT—continued.																																		
SOUTH OTAGO—continued.																																		
Taratu, Taratu ..	Shore, T.	7	brown	1	20'	8' to 12'	1 in 10	bord and pillar	2	6' x 4' 13' 6" x 200'	shaft	Tons. 12,676	Tons. 4,670	Tons. 17,346	91,413	108,759	15	38	steam	..	..	fan	23/12/08											
Kaitangata	Carson, W. (N.Z. Coal and Oil Co., O. G. Lockhart, sec.)	32	"	3	50' in aggregate	35'	1 in 1½ to 1 in 4	"	2	10' x 7' 8' x 4' 6" 11' x 6' 6" 9' diam.	inclined	67539	42,776	110,315	2,202,365	2,312,680	60	236	(steam & compressed air)	ditto	2' 6" three-eighth pump, ditto 6' 500' centrifugal steam-driven	..	..											
		15	"	4	50' in aggregate	..	1 in 1½ to 1 in 4	"	..	..	..													..	..	..	..	..	..	..	..	..		
		4	"	1	10'	..	1 in 6	"	..	..	..													..	..	..	..	..	..	..	..	..	..	19/8/08
		23	"	1	10' 6"	8'	1 in 6	"	..	..	..													..	..	..	..	..	..	..	..	..	..	..
Mainholn, Waipahi	Lischner, W.	23	lignite	1	20'	all	..	open	..	..	level adit tram-way	1,804	..	1,804	48,332	50,136	3	..	horse	..	..	..	19/12/08											
Lakeside, Private Pit.	McGillivray, W.	8	brown	1	..	..	..	..	..	..	..	194	..	194	899	1,093	..	..	..	..	..	..	..											
CENTRAL OTAGO.																																		
Coal Creek (leasehold)	Barber, J.	38	lignite	1	80'	10'	..	bord and pillar	..	8' x 7"	adit	2,727	..	2,727	46,914	49,784	2	5	horse	syphon	..	natural	4/12/08											
Coal Creek (freehold), Coal Creek Flat		7	"	1	..	..	..	ditto	1	6' x 7'	"	143	..	143	..	..	1	2	hand	..	..	..	4/12/08											
McPherson's, Coal Creek Flat	McPherson, A. J. (permit)	38	"	1	80'	30' to 40'	1 in 6	open	..	..	open	2,134	..	2,134	48,020	50,154	4	..	horse	drainage tunnel	..	..	4/12/08											
Perseverance, Coal Creek Flat	Craig, W. S. (permit)	21	"	1	75'	70'	1 in 3	bord and pillar	..	6' x 7'	adit	2,817	..	2,817	39,768	42,585	2	3	Pelton wheel & winch steam	hydraulic jet pump	..	natural	4/12/08											
Alexandra (including Undaunted), Alexandra	McNeill, D.	28	brown	1	14'	7'	1 in 7	ditto	1½	5' x 2' 6" 6' x 5' 15' ch.	"	3,458	160	3,618	64,770	68,388	1	7	..	Snow pump	..	exhaust steam pump	3/12/08											
Molynieux (Alexandra Company), Alexandra	Pollock, J.	10	"	1	25'	9'	1 in 20	"	2	6' x 4' 5' x 4' 6"	shaft	7,701	867	8,568	77,196	85,764	7	22	..	3-throat ram pump & Snow pump	..	steam pump and exhaust from pump-engine	3/12/08											
Cambrian, Cambrian Welshman's Gully, Cambrian's Jones's, Cambrian's St. Bathans, St. Bathans's Beck's Idaburn (including McLean's) Idaburn	Dungey, C. McGuckin, J. Jones, R. Enwright, J. Beck, W. (Mrs. McLean's) Idaburn	24	lignite	1	9'	all	..	open	..	..	open	22	..	22	14,460	14,482	1	..	horse	..	..	..	1/12/08											
		47	"	1	30'	"	..	"	..	..	"	139	..	139	32,841	32,980	1	..	"	..	..	..	1/12/08											
		4	"	1	..	15'	..	"	..	..	"	102	..	102	40	142	1	..	"	..	..	..	1/12/08											
		11	"	1	indefinite	all	..	"	..	..	"	340	..	340	4,222	4,562	2	..	"	drainage tunnel	..	..	2/12/08											
Idaburn, Idaburn ..	White, J.	38	"	1	20'	..	..	"	..	..	"	944	..	944	38,778	39,722	2	..	..	..	..	..	2/12/08											

Gimberburn, Gimberburn Vincent, Clyde	Dougherty, C. Turner, G. F.	52	1	12'	14'	1 in 2	levels	2	6' x 5 1/2'	20 ch.	dip	48	2,917	2,965	1	1	hand	steam	25/9/08
Dairy Creek, Clyde	Turner, G. F.	36	2	40'	14'	1 in 2	"	2	6' x 5 1/2'	20 ch.	dip	1,173	24,135	25,308	2	5	7	"	25/9/08
Cardrona, Cardrona Gibbston, Gibbston	McDougall, R. Duncan, J.	24	1	30'	all	vertical	open	1	4' x 3'	34'	open	1,180	22,201	23,381	4	2	6	horse	13/5/08
Shepherd's Creek, Bannockburn	Parcell, W. R. (Gronwell and Bannockburn Collieries Co. T. K. Hart, managing director)	31	1	10'	7'	1 in 4	ditto	1	6' x 6'	897'	incline	6,319	47,447	53,766	3	14	17	"	26/9/08
Excelsior (including Bannockburn), Bannockburn	Hodson, J.	18	1	6'	5'	1 in 4	"	2	6' x 5 1/2'	20 ch.	adit	185	58,828	59,013	2	3	5	"	26/9/08
Cairnmuir, Bannockburn	Scott, C.	6	1	20'	10'	1 in 1 to 2	levels & headings	2	"	"	dip	3,790	8,218	12,008	1	7	8	"	26/9/08
Nevis, Nevis	Scott, C.	14	1	20'	all	vertical	open	"	"	"	open	511	5,589	5,589	"	"	"	hand	10/12/08
Ryders, Nevis	Scott, C.	8	1	45'	"	vertical	"	"	"	"	"	511	3,818	4,329	1	1	1	"	11/12/08
Nevis Crossing, Nevis	Ritchie, Robert	6	1	"	"	semi-vertical	"	"	"	"	"	1,318	5,018	6,336	2	2	2	"	11/12/08
Upper Nevis, Nevis	Ritchie, James	3	1	"	all	"	"	"	"	"	"	"	140	140	"	"	"	"	11/12/08
Private Pits.																			
Kyebrum, Kyebrum Diggings	McCreedy, W. J.	25	1	"	"	vertical	levels	"	"	"	adit	"	15,452	15,452	"	"	"	"	"
McKnight's (late Price's), Blackstone Hill	McKnight, D.	11	1	12'	all	"	open	"	"	"	open	10	175	185	"	"	"	"	"
Donaldson's, Mount Highway	Donaldson, W. and G.	3	1	6'	5'	"	bord and pillar	"	5' x 6'	60'	dip	258	200	458	"	"	horse	"	"
SOUTHLAND.																			
Pukerau, Pukerau	O'Hagan, C. (per-mit)	28	1	16'	8' to 10'	1 in 10	ditto	1	8' x 8'	11 ch.	adit	667	33,911	34,578	1	2	3	"	29/4/08
Nelson's, Pukerau	Nelson, J. H.	19	1	16'	10'	1 in 10	"	"	"	"	"	170	3,829	3,999	"	"	1	hand	29/4/08
Heffernan's (including White-rigg), Gore	Burgess, W. (per-mit)	30	1	22'	8'	"	levels & headings	1	6' x 5'	"	incline	2,869	42,975	45,244	1	3	4	horse	1/5/08
Green's, Gore	Mason, J.	20	1	17'	all	1 in 20	bord and pillar	1	10' x 8'	5 ch.	ditto	9,413	74,148	88,867	2	5	7	"	10/9/08
Smyth's, Gore	Broome, J. (per-mit)	12	1	16'	15'	1 in 20	ditto	"	"	"	"	3,504	12,294	15,798	2	3	5	"	10/9/08
Bushy Park, Croydon	Tweedie, G. (per-mit)	3	1	30'	10'	"	"	"	"	"	"	3,280	6,570	9,850	2	3	5	"	23/7/08
Boornwell, Chatton	Cameron, D. (per-mit)	9	1	20'	12'	1 in 10	levels & headings	"	20' x 12'	100'	adit	2,901	14,316	17,217	1	3	4	"	9/9/08
Pacey's (freehold), East Chatton	Strachan, J. (per-mit)	5	1	20'	10' to 12'	"	bord and pillar	"	"	"	"	3,359	27,566	30,925	"	3	3	steam	9/9/08
East Chatton, East Chatton	Ramsay, P. (per-mit)	6	1	30'	20'	1 in 5	levels	"	"	"	"	1,865	6,250	8,115	2	3	5	horse	9/9/08
Thorndale, Waikaka Valley	Higsted, Thomas	9	1	10'	all	"	open	"	"	"	open	30	8,102	8,132	1	"	1	"	21/2/08
Springvale, Waikaka Valley	McColl, D.	15	1	15'	8'	"	"	"	"	"	"	1,757	16,550	18,307	3	"	3	"	10/9/08
Willow Bank, Waikaka Valley	Charles, Edward	12	1	15'	all	"	bord and pillar	"	"	"	"	9,668	31,178	40,846	1	7	8	steam	10/9/08
Glenlee, Waikaka Valley	McGill, D. T. (per-mit)	15	1	20'	8'	"	levels & headings	"	10' x 8'	2 ch.	adit	653	9,981	10,634	1	1	2	horse	9/9/08
McDonald's, Waikaka Valley	McIvor, W. (per-mit)	9	1	20'	12'	"	ditto	"	12' x 12'	"	"	4,089	16,609	20,698	1	3	4	steam	9/9/08
Landslip, Landslip, Waikaka	Hughes, J. (per-mit)	17	1	17'	all	"	"	1	"	60'	incline	6,268	24,968	31,236	2	6	8	"	8/9/08

STATISTICS OF WORKINGS IN COAL-MINES, 1908—continued.

Name of Mine and Locality.	Name of Manager.	Number of Years worked.	Quality of Coal.	No. of Seams worked.	Thickness of Seams.	Thickness worked.	Dip of Seam.	System of Working.	Number of Shafts.	Dimensions of Shafts.		Output delivered by	Output for 1908.			Approximate Total Output to 31st December, 1907.	Approximate Total Output to 31st December, 1908.	Number of Men ordinarily employed.			Power used for drawing Mineral.	Pumps.			Means of Ventilation.	Date of Inspector's Last Visit.
										Size of Shaft or Adit.	Depth of Shaft or Length of Adit.		Coal.	Slack.	Total.			Above.	Below.	Total.		Stroke.	Size of Barrel.	Height of Column.		
SOUTHERN INSPECTION DISTRICT—continued.																										
SOUTHLAND—continued.																										
Riverbank, Landslip, Waikaia	Kyle, W. (permit)	5	lignite	1	10'	all	1 in 8	levels & headings	..	6' x 4'	..	adit	Tons. 1,803	Tons. ..	Tons. 1,803	4,806	6,609	..	5	5	hand	oil engine and pump	natural	24/7/08		
Rossvale, Landslip, Waikaia	Bond, J. (permit)	5	"	1	10'	"	..	bord and pillar	2	6' x 5'	100'	"	5,417	..	5,417	9,042	14,459	2	4	horse	..	"	24/7/08			
Waikaia, Monaghan's, Landslip, Waikaia	Cain, A. (permit)	1	"	1	10'	"	1 in 4	ditto	..	..	..	"	2,306	..	2,306	2,948	5,254	1	5	"	..	"	8/9/08			
Muddy Terrace, Waikaia	McLelland, J. ..	6	lignite & shale	2	14'	"	..	"	..	..	..	dip	2,178	..	2,178	9,728	11,906	1	4	"	..	"	8/9/08			
Argyle, Upper Waikaia	Hutton, C. H. ..	17	lignite	1	10'	"	vertical	open lifts	..	..	..	open	158	..	158	3,241	3,399	1	..	hand	..	..	21/3/08			
Anderson's (late Radford's), Waikaia	Yeomans, S. ..	2	"	1	18'	10'	..	"	..	..	..	"	313	..	313	5,122	5,435	..	2	"	..	..	natural	..		
Beer's, Mossburn ..	Beer, Mrs. T. ..	6	"	1	6'	all	irregular	open	..	..	..	open	151	..	151	359	510	2	..	..	..	..	..	21/11/08		
Te Anau (or Lynwood), Te Anau Downs	Tourist and Health Resorts Depart.	8	"	1	7'	"	..	"	..	..	..	"	282	..	282	850	1,132	2	..	..	..	..	..	21/11/08		
Mataura Collieries Company, Mataura	Johnson, W. C. (permit)	12	"	1	7'	"	..	"	..	..	..	"	7,648	..	7,648	102,601	110,249	6	2	horse	drainage tunnel	..	..	23/7/08		
Mataura Lignite, Mataura ..	Coster, W. ..	32	"	1	110' to 20'	"	..	"	..	..	..	"	7,315	..	7,315	66,904	74,219	8	..	"	centrifugal steam-driven	..	..	23/7/08		
Boghead, Mataura ..	Sleeman & Co. ..	11	"	1	12' to 20'	12'	..	"	..	..	..	"	1,122	..	1,122	5,712	6,834	3	..	"	Douglas pump water-driven	..	..	23/7/08		
Waimunu, Waimunu	Wallace, J. (permit)	9	"	1	9'	7'	..	bord and pillar	..	..	..	"	2,870	..	2,870	24,463	27,333	..	3	"	..	natural	23/7/08			
Ota Creek, Ota Creek	Genge, James E. ..	28	"	1	6'	all	..	open	..	..	..	open	500	..	500	13,524	14,024	2	..	"	..	..	..	24/10/08		
Clarke's, Wyndham	Clarke, S. ..	2	"	1	10'	"	..	"	..	..	..	"	1,986	..	1,986	2,926	4,312	2	..	"	centrifugal pump	..	..	..		
Robin Hood, Pine Bush	Couser, William	27	"	1	15'	"	1 in 20	bord and pillar	..	..	6 ch.	adit	179	..	179	2,659	2,838	1	..	hand	..	..	..	16/11/08		
Graham's, Fairfax ..	Graham, P. S. ..	30	"	1	6'	"	..	"	..	..	..	"	120	..	120	16,141	16,261	..	1	"	..	..	natural	16/11/08		
Ardlowie, Fairfax ..	Poole, E. ..	6	"	1	..	"	..	open	..	..	..	open	184	..	184	510	694	1	..	"	..	..	..	16/11/08		
Speybank, No. 2, Fairfax	Smith, William ..	2	"	1	3'	"	variable	"	..	..	32 ch.	open and	152	..	152	412	564	1	..	"	..	..	..	16/11/08		
Nightcaps, Nightcaps	Barclay, William	27	brown	3	36' in aggregate	24' in aggregate	to 1 in 7	bord and pillar	..	4' x 4' 6" 5' x 5'	15 ch.	adit levels	48,487	..	48,487	567,776	616,263	35	57	steam and horse	..	..	..	18/12/08		
Hit or Miss, Nightcaps	Tinker, W. (permit)	8	"	1	7'	all	..	bord and pillar	..	..	..	adit	1,781	..	1,781	3,831	5,612	1	3	horse	..	natural	23/10/08			
H.B., Nightcaps ..	Spence, G. R. (permit)	10	"	1	7'	"	..	ditto	..	..	..	"	2,078	..	2,078	5,661	7,739	1	2	"	..	"	..	23/10/08		
New Brighton, Nightcaps	McKenzie, D. (permit)	14	"	1	17'	"	..	"	..	..	..	"	1,902	..	1,902	70	1,972	2	3	"	..	"	..	17/12/08		
The Willow, Nightcaps	Clark, John ..	9	"	1	14'	"	..	open	..	..	..	open	190	..	190	2,127	2,317	2	..	..	..	..	..	17/12/08		

Wairoa (late Manuka Hill) Nightcaps	Lewis, James (permit)	4	"	1	17'	10'	..	bord and pillar	8' x 8'	2 ch.	adit	1,729	..	1,729	1,096	2,825	1	4	5	steam	5" 2-h.p. oil-engine	5" 12'	Pair Gould's pumps natural	17/12/08
Hogan's, Orepuki ..	Hogan, C.	4	lignite	1	11'	..	..	open	..	..	open	..	..	..	20	20	..	..	..	..	..	..	..	30/7/08
Wildbush, Riverton ..	Smith, William ..	1	"	1	11'	..	..	"	..	..	"	132	..	132	..	132	2	..	2	..	..	..	..	29/7/08
Bush Siding, Seaward Bush	Bowden, F. R. ..	6	brown	1	20'	all	..	"	..	..	"	748	..	748	4,140	4,888	3	..	3	horse	..	..	..	..
Clifton, Clifton ..	Gillies, T. ..	7	"	1	..	..	..	..	..	..	..	..	..	..	297	297	..	..	..	..	..	..	..	
Private Pits.																								
Waverley Park, Pukerau ..	Milne, James ..	7	lignite	1	7'	all	..	open	..	..	open	..	..	..	30	30	..	..	..	..	..	..	..	29/4/08
Mason's, Wellwood Park, Pukerau	Mason, A. M. W.	7	"	1	7'	"	..	"	..	..	"	24	..	24	130	154	..	..	..	..	..	..	..	..
Mason's, Pukerau ..	Mason, jun., A. ..	1	"	1	7'	"	..	"	..	..	"	13	..	13	..	13	..	..	..	..	..	..	..	29/4/08
Glover's, Pukerau ..	Glover, Thomas ..	11	"	1	7'	"	..	"	..	..	"	35	..	35	199	234	..	..	..	..	..	..	..	29/4/08
Smith's, East Gore ..	Smith, H. ..	6	"	1	7'	"	..	"	..	..	"	..	..	..	47	47	..	..	..	..	..	..	..	29/4/08
Riverview, Gore ..	Nicol, L. D. ..	17	"	1	..	"	..	"	..	..	"	41	..	41	1,618	1,659	..	..	..	..	..	..	..	29/4/08
Cross's, Otama ..	Cross Bros. ..	10	"	1	4'	"	..	"	..	..	"	..	..	..	169	169	..	..	..	..	..	..	..	..
Ford's, Onatton ..	Ford, P. ..	28	"	1	7'	"	..	"	..	..	"	30	..	30	1,224	1,254	..	..	..	..	..	..	..	21/2/08
Perkins's, Wendon Valley	Perkins, G. A. ..	7	"	1	7'	"	..	"	..	..	"	10	..	10	57	67	..	..	..	..	..	..	..	..
Tuach's, Waimumu ..	Tuach, J. ..	2	"	1	..	"	..	"	..	..	"	..	..	..	12	12	..	..	..	..	..	..	..	..
Blackmount, Blackmount	Studholme, P. ..	..	brown	1	5'	all	..	"	..	..	"	..	..	..	58	58	..	..	..	..	..	..	..	19/11/08
Wyndham, Wyndham ..	Irvine, D. ..	13	lignite	1	..	"	..	"	..	..	"	..	..	..	328	328	..	..	..	..	..	..	..	..
Mount Linton, Nightcaps ..	McGregor, W. G. A.	14	brown	1	10'	8'	..	open	..	..	"	7	..	7	644	651	..	..	..	..	..	..	..	17/12/08
Output of mines included in 1907 statement, at which operations are suspended	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,401,023	1,401,023	..	..	..	..	..	..	..	..
Totals, Southern District, Middle Island	..	..	..	..	..	..	..	..	..	..	..	363,922	88,560	452,482	794,498	839,739	308	744	1052	..	..	..	..	..
Totals, West Coast District, Middle Island	..	..	..	..	..	..	..	..	..	..	..	835,640	227,926	1,063,566	1,251,662	1,358,018	563	1,646	2,208	..	..	..	..	..
Totals, North Island	..	..	..	..	..	..	..	..	..	..	..	306,164	38,763	344,927	446,107	480,598	122	512	634	..	..	..	..	..
Grand Totals	..	..	..	..	..	..	..	..	..	..	..	1,505,726	355,249	1,860,975	2,492,599	2,678,574	992	2,902	3,894	..	..	..	..	..

Add output of following eleven mines, included in previous statement but now abandoned: Motupipi, 360 tons; Westport-Wallsend, 3,441 tons; Waimangaroa, 17,307 tons; Wellington, 2,299 tons; Inkerman, 2,665 tons; Inglewood, 314 tons; Devil's Creek, 343 tons; Inangahua, 71 tons; Murray's Creek No. 2, 450 tons; Burke's Creek, 300 tons; Reefton, 96 tons: total

Output of mines included in statement for 1890, but whose operations were suspended prior to 1890 (less three, which are again included in body of statement—namely, Hill's Creek, 779 tons; Lovell's Flat, 323 tons; Wyndham, 1,988 tons: total, 3,090 tons)

Output of mines included in former statements, but whose operations were suspended prior to 1889

Output of Waikaka, Adam's Flat, and Waimea Mines, inserted twice in statement for 1891

27,122,939
