1911.

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.Inst.M.M., Inspecting Engineer, to the Hon. the MINISTER OF MINES.

SIR,— Mines Department, Wellington, 27th April, 1911.

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 end d 31st December, 1910.

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 Officials' Examinations, and List of Certificate-holders.
(*c.*) Statistics of Working-collieries.

SECTION I.—OUTPUT OF MINERAL.

A satisfactory increase of 15 per cent. has to be recorded in the annual coal-production.

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

Class of Coal, &c.	Northern District.	West Coast District.	Southern District.	Total.
	Tons.	Tons.	Tons.	Tons
Bituminous and semi-bituminous coal ...	154,797	1,340,912	...	**1,495,709**
Pitch-coal	...	...	6,068	**6,068**
Brown coal...	245,867	120	349,008	**594,995**
Lignite	...	...	100,590	**100,590**
Totals for 1910... ...	**400,664**	**1,341,032**	**455,666**	**2,197,362**
Totals for 1909	348,370	1,122,642	440,235	**1,911,247**
Increase	...	...	...	**286,115**

The increased production has taken place in all the inspection districts, and at nearly all of the important collieries, the output of which is shown hereunder :—

Name of Colliery.	Locality.	Class of Coal.	Output for 1910.	Total Output to 31st December, 1910.	Total Number of Persons ordinarily employed.
Northern District.			Tons.	Tons.	
Hikurangi	Hikurangi...	Semi-bituminous	62,840	702,792	90
Taupiri	Huntly ...	Brown ...	228,962	2,322,151	539
Northern	Hikurangi...	Semi-bituminous	44,626	368,173	77
Kiripaka	Kiripaka ...	Ditto ...	45,462	245,453	59
West Coast District.					
Coalbrookdale	Millerton ...	Bituminous	268,816	3,132,351	490
	Denniston	"	347,719	5,722,431	647
Westport-Stockton	Mangatini	"	151,951	244,893	165
	Seddonville	"	62,714	340,059	115
State Coal-mines	Point Elizabeth	"	212,888	1,224,571	487
Blackball	Blackball ...	"	166,505	1,313,125	288
Southern District.					
Kaitangata	Kaitangata	Brown ...	138,940	2,579,352	321
Nightcaps	Nightcaps...	" ...	58,010	724,325	97
Other collieries, in all districts ...	...	Various ...	407,929	12,311,872	1,158
Totals	...	...	**2,197,362**	**31,231,548**	**4,533**

SECTION II.—PERSONS EMPLOYED.

Inspection District.	Average Number of Persons employed during 1910.		
	Above Ground.	Below Ground.	Total.
Northern	159	679	838
West Coast	712	2,087	2,799
Southern	265	697	962
Totals, 1910	**1,136**	**3,463**	**4,599**
Totals, 1909	1,159	3,032	4,191

In conformity with the output the number of persons engaged at collieries has doubled within the past decade.

SECTION III.—ACCIDENTS.

The following is a summary of coal-mining accidents during 1910, with their causes.

—	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	8	10	8	8
Shaft accidents	1	1	...	...
Miscellaneous—Underground...	5	5	6	6
On surface ...	...	...	2	2
Totals	**14**	**16**	**16**	**16**

It is to be greatly regretted that the number of fatal mining accidents during 1910 has been higher than usual, no less than sixteen lives having been lost thereby.

It is not intended to excuse this bad fortune, for no good purpose can be served thereby. The importance of greater caution on the part of all concerned, including Inspectors, mine officials, and employees, cannot be too strongly impressed. It is not sufficient that conditions be reasonably safe, for to provide against those contingencies met with occasionally at all mines, ultra-safety should be insisted upon. The verdicts at the inquests on fifteen of the deceased were "Accidental death, no blame being attachable to any one," the sixteenth verdict being "Suffocation by misadventure"; this, no doubt, is satisfactory from the officials' point of view.

Of the fourteen fatal accidents, causing sixteen deaths, ten occurred in the West Coast Inspection District.

From the foregoing summary it will be seen that ten lives were lost by falls in the mine, which are becoming more prevalent as the stage of pillar-extraction is being advanced by the bord-and-pillar system.

During the first operation of driving bords on seams ranging in thickness up to 30 ft. or more, no special danger was experienced from falls, the coal being worked in two or more layers; but now that the pillar-extraction stage has been reached at several of the mines, the great height to be supported on timber has proved in many cases a difficult and dangerous proposition, especially where the seam is highly inclined. In such cases "bumps," or diagonal movements of the roof rocks, take place near the edges of the "gob," and the timber, however carefully erected, often proves ineffective, as the superincumbent weight does not fall directly upon the same, but strikes it obliquely, throwing down the props even when standing in great numbers.

The difficulty could no doubt be overcome by leaving behind "ribs" and "stumps" of coal of adequate dimensions to support the weight, but these measures, remedial doubtless in the above cases, would possibly create further dangers from gas-accumulations and spontaneous fire of the crushed coal; likewise the loss of marketable coal, together with the increased cost of production owing to more solid work (which is paid for at a higher rate than pillar-work), might have a very injurious effect on the coal-mining industry, and possibly lead to cessation of operations in some cases.

The position is a somewhat difficult one, for in no other country, as far as I am aware, does such valuable fuel occur in seams of such considerable thickness. At the Dutch Government's State Collieries at Sumatra a seam of 50 ft. in thickness is almost completely extracted in layers commencing at the floor. As each layer is removed sand is sluiced into the space formerly occupied by the coal-seam; the layer of coal above is then attacked and in turn filled in by the hydraulic sand filling; and so on until all coal is removed and replaced by sand; but the local conditions in Sumatra are favourable to this method, and it is to be regretted that the undulating form of the New Zealand coal-seams and the absence of beds of sand in proximity to the same render this system inapplicable to this country.

The discovery of a safe and economical method by which a high percentage of the thick coal-seams of New Zealand may be extracted is a subject that deserves special research, but I am not sanguine of an entirely satisfactory solution.

The following statement shows the tons of mineral raised (coal and shale), persons employed, lives lost, &c., from 1878 to 1910:—

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
1909 ...	1,911,247	1,159	3,032	4,191	633	273,035	599	1·79	7
1910 ...	2,197,362	1,136	3,463	4,599	634	137,335	283	3·55	16
Totals...	31,231,548	...	...	...	...	...	...	...	233

* No life lost. † Year of Kaitangata explosion. ‡ Year of Brunner explosion.

SECTION IV.—GENERAL REMARKS.

Mining Operations.

At the Hikurangi Colliery a new dip heading has been driven on an extensive area of coal, upon which the Waro limestone rocks outcrop. From this heading levels have been driven. The seam, which is of good quality, is from 9 ft. to 11 ft. in thickness. It is expected that the old workings at this colliery will be exhausted during 1912.

At the Kiripaka Colliery pillar-extraction only was carried out during the year. Exploration to the dip by driving headings and by surface boring proved the coal to be too thin to be profitable.

The Taupiri Coal-mines (Limited), at Ralph's Mine, have confined their operations to the dip underlying the Waikato River to the west. The main haulage-road has been extended. A special heading has been completed connecting the company's Taupiri West and Ralph's Collieries. This heading will eventually serve as a main haulage-road, in addition to being a necessary safety precaution.

At the Extended Mine, the property of the same company, the main dip headings have been advanced, and a considerable amount of development has been carried out. Extensive alterations have been made to the surface and underground arrangements.

The company's Taupiri Reserve Mine was closed owing to a fire breaking out which could not be extinguished. The affected area was isolated. It is proposed to work the coal to the dip of the present isolated workings by sinking a shaft near the Kimihia Railway-station.

The Waipa Railway and Collieries (Limited) do not propose to commence mining operations until their branch line of railway connecting with the Main Trunk line near Ngaruawahia is further advanced.

At Retaruke, situated on the hills a few miles to the westward of Waimarino, a Government prospecting party of th ee miners, under Mr. J. Mason, certificated mine-manager, was engaged for several months driving on outcrops of coal exposed in the gullies of the Retaruke River and its tributaries, Coal Creek and Dandy Gully. Four drives were put in, aggregating in length 124 ft. The results were disappointing. In each instance bands were found to be continuous, the following section occurring at all faces: Roof, claystone, inclination slight; top coal, 12 in.; band (shale), 4–5 in.; middle coal, 12 in.; band (sandstone), 5 in.; bottom coal, 16–18 in.; shale, 12–15 in.; floor of seam, under clay. The coal is of poor appearance, containing excessive water, ash, and sulphur—all defects. In quality it is an inferior brown coal (lignitous). The exploration was discontinued owing to the results not warranting further consideration.

In the West Coast Inspection District the prospects in the lower levels at the Puponga Mine considerably improved during the year, but as no boring operations have been carried out to test the ground in advance of the dip workings, the continuity of the coal is unproved. The workings in this mine expose considerable faulting. Coal-cutting machines of Radialaxe type are successfully employed in the lower levels at this colliery. The stone band which occurs in the seam enables economical holing and the production of a good percentage of round coal.

On the Buller Coalfield, at Seddonville State Colliery, operations were chiefly confined to pillar-extraction. During 1910 a considerable demand for slack and soft coal existed, owing to the strike at the New South Wales collieries, which was favourable to the disposal of much fuel of the above class from New Zealand mines.

Operations at the briquette-works at Westport, carried out in conjunction with this colliery, have been suspended owing to the high cost of production not permitting of any profit on the manufacture of briquettes and eggettes.

A considerable amount of boring by hand and diamond drills was and is now being carried out within the Charming Creek area of the State Coal Reserve. The result of such exploration has hitherto been but moderately satisfactory. Two seams of coal have been proved to occur, about 40 ft. to 70 ft. apart (vertically), the upper seam being from 10 in. to 18 in. thick and the lower seam 20 ft. Both are of high-class bituminous quality. The upper seam covers a considerable area, but the lower is not so extensive, the maximum width from west to east of the lower seam hitherto proved by boreholes being only 40 chains. As boring operations are now in progress, and the locality is under survey by the Director of Geological Survey, it is premature to express an opinion on the extent of the workable coal existing within the Charming Creek Valley.

The Westport-Stockton Colliery had a very successful year, nearly doubling its output for 1909. An alteration has been made in the haulage system originally proposed, it having been found expedient to install endless-rope haulage in the upper C and D sections in preference to electric traction. In common with several other West Coast collieries, a considerable extent of soft coal has been met with in the workings from B and C sections, and in D section the seam varies much in thickness and is not of superior quality. It is hoped by the management to discover a lower seam, but the evidence of the existence of such appears very small. This property is equipped with the most complete electrical mining outfit in the Dominion.

The Millerton Colliery (Westport Coal Company) has increased its annual output by 20 per cent., and development of the Mangatini section has proved extensive areas of high-class hard bituminous coal. In the Mine Creek section a seam of superior class has been discovered below the seam hitherto worked.

At the celebrated Coalbrookdale Colliery (Westport Coal Company) considerable developments have been carried out; notably in the Dip Cascade section, where a large area of virgin coal has been proved; also in the Wareatea section, which it is now proposed to connect with the main surface and underground endless-rope-haulage system of the property. In the Ironbridge section the development of Nos. 2 and 7 dips has proved an extensive area of excellent coal from 10 ft. to 12 ft. thick, which

maintains its continuity and thickness as far as development has progressed. The greater portion of the output from Coalbrookdale is obtained from pillar-extraction, and the great thickness of the coal-seam necessitates special precautions being taken to protect the miners from falls. The system of mining in operation is bord and pillar.

On the Grey Coalfield the Blackball Colliery increased its annual output by 33 per cent., which to a considerable measure may be attributed to the extension of the Government railway to the colliery. This has replaced the aerial tramway of limited capacity which was formerly employed. Considerable development has been carried out at the No. 17 Bank section, and it is intended to extend the main endless-rope-haulage system to this section. A dip heading is in progress to win the coal lying to the west and beyond the railway-sidings. It is proposed to penetrate the fault encountered in the main levels, as an estimated area of at least 200 acres, containing a 20 ft. seam of bright hard bituminous coal, is believed to occur behind the fault.

The newly opened Paparoa Colliery, which is equipped with a very high-class plant and endless-rope-haulage system, has not produced as much coal as anticipated, the difficulty being extensive areas of friable coal, for which the demand was not great. The whole of the output was won from Nos. 1, 2, and 3 seams, where considerable development has been carried out.

The North Brunner Mine was added to the list of productive collieries during the year. The output commenced in February. Mining operations were started at what is locally known as the 16 ft. area, but they were discontinued on account of the soft and friable nature of the coal. Operations were then transferred to the upper seams, situated about 1,385 ft. above sea-level, and distant 76 chains from Stillwater, where the storage-bins are located. The top seam, averaging about 5½ ft. in thickness, is in considerable demand for gas-production, also for smithy purposes. It is to be regretted, therefore, that soft and faulted areas are much in evidence.

Point Elizabeth State Colliery No. 1 has almost maintained its output; weather conditions, which interfered considerably with shipping from Greymouth during the year, possibly accounted for the small decline in output. At the No. 1 section the whole of the mine is now standing on pillars, and from No. 2 section the output was all derived from pillar-extraction.

At the No. 2 State Mine, situated towards the head of Seven-mile Creek, and to which a branch Government railway has been formed and only requires ballasting before completion, good progress has been made with the development of a new colliery, which should reach the output stage by August, 1912. The work in hand includes the driving of inclined haulage-tunnels in rock and coal, also trestle-work and storage-bins. At the head of the inclines a level 15 chains in length has been driven in a strong seam of superior bituminous steam-coal.

In the Southern Inspection District the well-known Kaitangata Colliery has increased its annual output. Development has proceeded steadily, in coal of good quality, to the south and east and other sections of the mine. The inclination of the seam in the advanced workings has changed from steep to comparatively flat or undulating, which has caused a problem as regards effective haulage.

At the Nightcaps Colliery a 10 per cent. increase in annual output has occurred. The dip workings of the No. 1 district have developed coal of good quality, with improved roof. In the No. 2 district developments have proved the lower (or No. 3) seam to have increased from 4 ft. to 10 ft. where now worked.

Ventilation and Sanitation.

Special attention has been devoted to this very important subject, and it is now believed by those competent to express an opinion that, taken as a whole, the collieries of the Dominion are exceedingly well ventilated. To a certain extent this opinion is substantiated by the fact that for fourteen years no life has been lost as the result of an explosion of firedamp. Owing to the shallow depth of the coal-seams, high temperatures in our mines do not occur, and no inconvenience is experienced from humidity.

The Inspectors of Mines have generally adopted the standard of adequate ventilation as recommended by the British Royal Commission on Mines (1909) when they have been called upon to determine if the statutory minimum of 150 cubic feet of air per minute per person employed below ground shall be increased. The aforesaid standard fixed as a minimum 19 per cent. by volume of oxygen and a maximum of 1¼ per cent. of carbon-dioxide; when this standard is not attained the men to be withdrawn. The above test is not, however, fixed as an exact demarcation between adequate and inadequate ventilation, but as a test applicable to mining conditions. It has the additional advantage of being easy to determine, for when the mine-air reaches that degree of vitiation lights burn dimly. The Inspectors of Mines are provided with Davis anemometers, and hygrometers for gauging the volume and temperature of mine-air, also with portable cases containing glass-stoppered sample-bottles. For testing for the deadly carbon-monoxide, white mice, which are affected in one-fifteenth the time of a man, are employed. These small animals are now recognized as the most practical means of ascertaining whether carbon-monoxide is present. The measurement and sampling of mine-air is regularly carried out by the Inspectors of Mines, the samples being forwarded to the Dominion Analyst for determination.

At all collieries but those of insignificant proportions ventilation is produced by fans of modern type. Thirty fans are at present installed, the type of such mechanical ventilators most favoured being the "Sirocco," Waddle, Sturtevant, and Hayes.

As regards sanitation, attention is being directed towards the provision of satisfactory latrines in the return airways of the mines. In some collieries these have been introduced, but unless carefully attended to the object of their establishment is not attained.

It should be stated that ankylostomiasis (the hook-worm disease) is unknown in New Zealand mines, and, as far as I am aware, pneumoconiosis (miners' phthisis) has not been contracted at our collieries.

COAL-SHIPPING PORTS.

The following is a summary of the principal items of interest in connection with the coal-shipping ports of Westport and Greymouth during 1910 :—

	Westport.	Greymouth.
Receipts	£118,964	£34,049
Expenditure	£80,272	£32,865
Coal exported (tons)	831,115	407,129
Coke exported (tons)	Nil	2,800
Steamers visiting	1,217	765
Sailing-vessels visiting	10	34
Aggregate tonnage	711,881	383,816
Average depth of water on bar during the whole year ..	23 ft. 1 in.	21 ft. 3 in.
Average depth of water in river during the whole year ..	29 ft. 9 in.	19 ft. 7 in.
Total rainfall in inches	76·4	125·79

I have, &c.,
FRANK REED,
Inspecting Engineer of Mines.

ANNEXURE A.

REPORTS OF INSPECTORS OF MINES.

Mr. BOYD BENNIE, Inspector of Mines, Northern Inspection District, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,— Inspector of Mines' Office, Thames, 30th March, 1911.

In compliance with section 78 of the Coal-mines Act, 1908, I have the honour to present my report on the coal-mines in the Northern District for the year ended 31st December, 1910.

Kawakawa Colliery (Mr. Samuel Neill, mine-manager).—Early in the year some pillars were extracted from Moody's outcrop section. Owing to the presence of a band of fireclay in the seam, and the thinness of the seam, it was found unprofitable to continue these operations, and the section was closed down towards the end of the year. It is proposed to open up a new section. Four men were employed.

Ruatangata Colliery (Mr. J. McLelland, mine-manager).—During the year a shaft was sunk to a depth of 40 ft., when a coal-seam 7 ft. thick was proved. Levels have been driven for some distance, and expose coal of good quality and free from bands. Unfortunately, the area of coal appears to be very limited, an upthrow fault occurring near by. A steam-engine has been erected at the mine for winding and drainage purposes. Ventilation is fair. General rules posted, and report-book kept.

Hikurangi Coal Company (Limited) (Mr. W. R. Dunn, mine-manager).—Western area : Operations are confined to pillar-extraction. The seam is thin, and may be exhausted within twelve months. A good supply of timber on hand. Ventilation fair.

New Dip section : There is a large area of coal lying under and behind the Waro limestone outcropping rocks. A dip, or incline drive, has been driven, and levels have been extended some distance. The coal-seam is from 9 ft. to 11 ft. thick, and is of good quality. A second outlet has been made, considerably improving the ventilation.

No. 1 section (old mine) : The only work done in this section during the past twelve months was pillar-extraction. It is expected that the section will be worked out about the end of the year. Ventilation is good and the timbering well done.

No. 2 section (Crown lease) : The coal-seam is thin, and the haulage of great length, so the cost of production will be very high. Very little coal was mined during the year from this section. The check-inspectors examined the mines during the year, and although they complained of a shortage of timber, I always found plenty on hand, and had no cause for complaint in this regard. Rules posted, report-books kept, and reports regularly entered. The output of coal for the year was 62,840 tons. Ninety men were employed.

Northern Coal Company (Limited) (Mr. W. Morgan, mine-manager).—No. 1 section : Experienced miners were employed at this section extracting pillars, consequently the work was carried out with due care.

Drainage section : The coal still maintains its quality and thickness. Ventilation has been fairly well maintained. The check-inspectors made two inspections during the year, and, although they measured the ventilation with an anemometer, they failed to record the quantities in the report-books.

On the 22nd October, 1910 (No. 1 district) the check-inspectors reported : " Ventilation fair, timbering good, road in a very neglected state. No. 2 district : Ventilation good, timbering good, road neglected. No. 5 district : Ventilation in intake good ; very badly distributed," &c. And on reading the manager's report for the same day I found this entry : " No. 5 district : 4,376 cubic feet for nine men, or 486 cubic feet per minute per man." I examined the mine three weeks later, and took these measurements : No. 1 district : 562 feet of air per man per minute ; Nos. 3 and 4 districts,

706 cubic feet of air per man; No. 5 district, 377 cubic feet of air per man. Temperature, 75° Fahr. (dry); 74° Fahr. (wet). These figures show that at certain periods at least the mine-ventilation is exceedingly good. But, as only natural ventilation exists, it may have sometimes happened that the ventilation was below the standard. However, the company have since installed a fan, and the ventilation, instead of showing considerable variations as formerly, should be constant and adequate. The output of coal for the year was 44,625 tons. Seventy-seven men were employed.

Kiripaka Colliery (Mr. E. W. Tattley, mine-manager).—During the year the mine dip heading was extended and a cross-drive put out, but the seam thinned to such a degree as to be unprofitable. The company then decided to confine their attention for the time to extracting pillars in what was considered a safe area, but, unfortunately, when some pillars were removed a fall of roof occurred, followed by an inrush of water from the Ngunguru River. Surface protection-works had to be constructed to keep the water within the banks of the river, and the mine was subsequently drained. Mine-developments have proved very disappointing. Nothing of an important character has been discovered during the course of prospecting, and the end of the mine appears to be near. To the dip of the mine-workings boreholes have been put down, but with unsatisfactory results. This is a serious matter for the company, who have expended much capital lately on prospecting operations. Mine-ventilation was satisfactory. Rules posted, report-books kept, and reports entered regularly. The output of coal for the year was 45,462 tons 12 cwt. Fifty-nine men were employed.

Whangarei Colliery (Mr. A. H. Taylor, mine-manager).—When the main shaft was sunk to the required depth it was found as development-work proceeded that the field is much faulted, a series of trough faults being met with. The coal-seam is thin and hard, with occasional bands of stone running through it. No. 2 coal-seam, which is a few feet under No. 1 seam, is from 7 ft. to 10 ft. thick. A main development heading is being driven to the dip, and, it is believed, away from the faulted area. A series of boreholes have been put down from the surface, and there are indications of a large area of fair-quality coal being found. The output for the year was 1,469 tons of coal. Twenty-five men were employed.

Taupiri Coal-mines (*Limited*), Ralph's Mine (Mr. James Fletcher, mine-manager).—The main dip headings have been extended, and provision has been made for general development. The whole of the mine-workings are to the dip underlying and to the west of the Waikato River. As the adjacent areas become exhausted new areas are opened to the dip. The main haulage-rope has been lengthened, and a more powerful engine installed. During the year an outlet on the western side of the river was made by connecting by special headings Ralph's Mine and the Taupiri West shaft. This connecting-drive, when it is enlarged and properly graded, will be used as a main haulage-way. The west shaft has been lined with 9 in. reinforced concrete from the rock up to 12 ft. above the original surface level. A steam-engine and cages are at the shaft, to be used in case of emergency. In the north-western little dip, where the coal is of good quality, a number of men are working near the old Barrier pillar which divided Ralph's from the Extended Mine. The damaged pillar area under the Waikato River is being strengthened. The pillars do not appear to have suffered any further damage during the year. Two men were killed by a fall of rock in the connecting-drive. A number of minor accidents occurred. The shafts, cages, ropes, chains, and automatic gear connected therewith were carefully examined from time to time. The engines, boilers, and fan machinery are in good order. The mine was examined several times during the year, and was found to be in a very satisfactory condition. The output of coal for the year was 97,340 tons. Two hundred and forty-seven men were employed.

Extended Mine (Mr. William Wood, mine-manager): Development of the main dip has been well advanced ahead of present requirements. The main haulage was remodelled during the year, and extensive alterations made in connection with the surface and underground arrangements. The new haulage machinery referred to in last year's report is now erected, and is working very satisfactorily. The ventilating-fan and pumps are in good order. The boilers, chains, ropes, shafts, ladders, and travelling-roads were carefully examined during the year, and were found satisfactory. Special and general rules posted, report-books kept, and reports entered regularly. Check-inspectors made no examinations during the year. No fatal accidents occurred. The requirements of the Act are strictly attended to. The output of coal for the year was 130,353 tons, being an increase of 29,173 tons. Two hundred and eighty men were employed.

Taupiri Reserve Mine (Mr. William Wood, mine-manager): Early in the year a fall of rock and coal took place in a section of the old workings, and to prevent a further fall a timber pillar was built to support the roof. Later a fire broke out in the same section, and, an attempt to extinguish it having failed, the affected area was isolated. The cover overhead and underlying the Kimihia Lake being only 50 ft., it was deemed necessary for the safety of life to abandon the workings, and the pumps and rails were removed. The coal to the dip of the present mine can be more safely and economically worked from another point by sinking a shaft near the Kimihia Railway-station. Output of coal for the year, 1,269 tons. Twelve men were employed.

Taupiri South Colliery. — The mine-fires which led to the suspension of operations last year prevented work being resumed, and the mine is closed down indefinitely.

Union Collieries (Mr. F. J. Tattley, mine-manager).—The output of coal for the year as compared with that of the previous year shows a falling-off of 1,376 tons. No important works were undertaken. The mine was examined twice, and the ventilation and workings were in a satisfactory condition. Twenty-four men were employed.

Waipa Colliery (no manager).—The company are awaiting an Order in Council before they undertake the construction of a railway-line to connect with the Government line south of Ngaruawahia. It is anticipated that coal will be put on the market two years hence if no difficulties arise. Development-work may be undertaken this year.

Pukemiro Collieries (Mr. E. S. Wight, general manager).—The property taken up by the company is situated about seven miles west of Huntly. Several outcrops have been located as a result of prospecting. The coal-seams are thick and extensive. The extraction should be high, as there are no lakes or rivers overlying. Mining operations will be undertaken when the bridge and railway-line are completed.

Drury Colliery (Mr. James Holden, mine-manager).—It having been considered too expensive to continue working the mine, the company closed it down, and are now purchasing the coal required in connection with their brick and pottery works. Prior to closing down, the manager, acting on instructions, removed a quantity of fireclay overlying the drive, with the result that the side-pressure caused the sets of timber in the drive to collapse. The output for the year was 156 tons of coal and 174 tons of fireclay. Five men were employed.

Mangapapa Colliery (Mr. William Lennox, mine-manager).—The mine was examined during the year, and found to be in good condition. The ventilation was highly satisfactory. The coal maintains its quality and thickness. The band of stone in the coal is perceptibly thinning; in fact, it is not visible in places. Special and general rules posted, report-book kept, and reports entered regularly.

I have, &c.,

B. BENNIE,

Inspector of Mines.

Mr. A. G. MARSHALL, Inspector of Mines, West Coast Inspection District, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,— Inspector of Mines' Office, Westport, 10th February, 1911.

I have the honour, in compliance with section 78 of the Coal-mines Act, 1908, to present my report on the West Coast coal-mines for the year ended 31st December, 1910.

Enner Glynn Coal-mine, Nelson (James Carroll, permit).—(2/7/10): Upon the new level or crosscut, mentioned in my report of last year, reaching a driven distance of 130 ft., a small seam of coal 4 ft. to 5 ft. in thickness was intersected, which, on being driven on, proved to be only 40 ft. in length. From the inby or northern end of this block of coal, and adjacent to the old workings of the former company, the manager commenced stoping, rising on the seam to a height of 45 ft. At this height the coal showed no signs of improvement in quality, and work in this direction was therefore abandoned. From here an intermediate level was set out on the line of strike, and carried on for a considerable distance, the coal gradually thinning and continuing soft and unsaleable. Owing to the want of capital to further prospect and develop the property, the owners were compelled to close down on the 29th August, 1910. The mine has been fenced off, and notice of abandonment of same, in compliance with the Coal-mines Act, received in this office.

Smythe's Coal-lease, Mataura, Collingwood (A. Walker, permit).—(29/11/10): During the year the systematic prospecting of this field has been carried out, a large amount of exploratory work having been done, and three coal-tunnels driven. Aggregate distance driven, 140 ft.

Seaford Colliery, Pakawau.—This mine continues closed down, and no work has been done during the year.

Taupata Estates (R. G. Filluil, owner; Messrs. Forbes and Riley, lessees; James Hawthorn, permit).—(29/11/10): During the early months of the year the vigorous prospecting of this estate was continued by Messrs. Lewis Brothers and Forbes, but as their efforts met with little success they abandoned the project in July last. However, Mr. Forbes, who appears to have been more sanguine as to the prospects of the field, continued to prospect same, and his perseverance has been rewarded by the cutting of a seam of coal, 3 ft. 6 in. thick, of good quality.

Puponga Colliery (C. Y. Fell, attorney, Nelson; R. McEwan, mine-manager).—(28/11/10): Recent developments in the bottom levels and to the east of the main dip are highly satisfactory, and at no time have the prospects in the lower workings been more promising. How long this satisfactory state of affairs may continue is a matter of conjecture, no boreholes having been put down to prove the field in advance of the dip. The main dip heading has been sunk only some 3 chains during the year, the coal in the face having been displaced by bands of stone. Therefore, to win the coal lying to the north-east of the present dip face, it has been considered advisable to slightly deviate the main dip haulage-road in this direction. All driving will be in coal, and if it is proved to live beyond the troubled area now showing in the dip, the main haulage-road can again be straightened up. No. 10 east level: From its intersection with the dip this level advanced only some 10 chains, when the coal was gradually cut out by bands of stone, and became unprofitable. The same thing happened in No. 12 level, after driving 14 chains. No. 13 east level has now advanced about 6½ chains, and shows excellent prospects for the levels to the northward. Without doubt, the good coal is extending in an easterly direction, and indications point to this level reaching at least 20 chains before any thinning should take place, and it is just possible that the coal may extend from this level to the Puponga Flats. A few pillars have been extracted along the boundary of the unworkable coal, much of which has been very stony, soft, and crushed. To cope with any influx of water that may take place, a large Tangye pump has been installed, which is giving every satisfaction. Five Radialaxe coal-cutting machines continue to be employed in the lower levels, with considerable success. The machines hole in one of the bands of stone, and produce a large percentage of round coal. Much of the main dip has been retimbered and otherwise repaired. During the year a borehole was put down to a depth of 130 ft. at the entrance to the mine, and, though several small seams of coal were passed through, nothing payable was encountered. Considering the highly improved nature of the coal and the increased area in sight, the prospects for the company are now brighter than at any time heretofore. Rules posted, and reports to date.

Seddonville State Colliery (I. A. James, manager).—(30/12/10): West section: Recent developments in this section have resulted favourably. The coal in the working-faces, which are being driven in a northerly direction and almost parallel with the main haulage-road, is of better quality than previously met with here. The extraction of the pillars to the rise in the Cave area continues to be carried out. Where pillars are withdrawn there is in places from 6 ft. to 7 ft. of soft coal overlying the harder bottom coal, and it is to be regretted that no sale can be found for this soft coal, as at present it is being buried up by falls of roof, and may cause serious trouble in the future. The new heading, mentioned in my report of last year as being set out from this section to prove the area lying to the east of the rope-road, was for some time only intermittently at work, and on above date a faulting had taken place, entirely displacing the coal. Bridge section: During labour troubles in the coal-mining industry in New South Wales, which gave an impetus to the coal trade throughout the Dominion, several pairs of miners were employed in this section, as well as the Eastern section, filling large falls of coal which had taken place during the temporary abandonment of these areas. The output from the mine shows a decrease of 5,221 tons as compared with the output for the year 1909. The timbering and ventilation of this small colliery are satisfactory.

Westport-Stockton Colliery (H. Chamberlain, managing engineer; H. McAvoy, mine-manager).—(8/11/10): This colliery has now been in operation for two years, during which time a total output of 244,443 tons of coal has been produced. The output for the year under review was 151,951 tons, or 62,276 tons in excess of that for the year 1909. For the first six months of the year the whole of the output was won from B tunnel, which produced by double-shifting from 800 to 1,000 tons of coal per day. To fully develop the area lying to the south of the lease, a bridge spanning the Mangatini Gorge, and constructed of Australian hardwood, was completed in May last. During the completion of a new haulage-road to connect B and C tunnels, which has a total length of 65 chains, with a mean gradient of 1 in 13 in favour of the load, the coal from C tunnel was lowered by the main rope-haulage system, which junctioned with the main electrical haulage system in B tunnel. The new haulage-road has been equipped with the endless-rope haulage, on which the load is controlled by an electrically driven brake. For lowering the coal from D tunnel a short incline 7 chains in length, with a mean gradient of 1 in 3·2 in favour of the load, has been constructed, and also equipped with the endless rope. The load is controlled by a powerful hand-brake. The development of D tunnel is giving satisfaction, as also is C tunnel, where the winning headings are kept well in advance of requirements. For the ventilation of C tunnel a 30-in.-diameter "Sirocco" fan, motor-driven at a speed of 450 revolutions, producing an air-current of 20,000 cubic feet per minute, has been installed. D tunnel: For the ventilation of this section a shaft 9 ft. in diameter was sunk to a depth of 56 ft. An improved Waddle fan, 7 ft. diameter, somewhat similar to the fan in use at B tunnel (also motor-driven), has been erected over this shaft, and produces a current of 80,000 cubic feet per minute. The company have further augmented their electrical haulage by the purchase of an additional 20-ton electric locomotive, to deal with the anticipated increase of output. Rules posted, and reports to date.

Millerton Colliery (William Dunn, local manager; William McCormack, mine-manager).—(24/11/10): During the year the total output from this colliery, including engine-coal, was 274,905 tons, being an increase of 57,722 tons over 1909.

Mangatini section: The principal developments in this section have been to the westward of the main haulage-road, where the coal continues of a hard nature and good quality. During the year coal-cutting by machines was discontinued, and the coal is now won by hand-mining. A new endless-rope road-haulage system has been installed for a distance of 62 chains, connecting the Mangatini section with the main-haulage system at Mine Creek.

Mine Creek section: In Nos. 10 and 11 East sections, pillar-extraction has been carried out. Recent developments in Nos. 4, 5, and 6 West sections have proved a second seam of coal below that now being worked, this second seam extending over a large area of the Mine Creek field. The coal from it is of superior class, both as regards quality and hardness. For the ventilation of this section a holing was effected from No. 6 West, to the escarpment of Mangatini Creek, and at the entrance a 6 ft. "Sirocco" fan has been erected, which is giving excellent results. To expedite the hauling of coal from this section, an entirely new road to connect with the main endless rope at Mine Creek end is in course of construction. The new haulage-road to supersede the heavy graded old Mine Creek Road has been completed. Throughout the whole length of track the rails have been laid on top of longitudinals; these in turn are securely fastened to sleepers, both tracks being held together with tie-sleepers every few yards. To control the load, a powerful hydraulic brake is situated at the Mine Creek end, housed in a substantial underground reinforced-concrete building.

Lower section, Old Dip: On inspection of the stoppings in this area, no abnormal signs of heating were noticeable, the thermometer registering 72° Fahr. However, a decided smell of sulphuretted hydrogen was noticeable. These fumes can in no way affect the workmen, as they are carried by overcast directly into the return airway. On inspection of the surface over this heated area, smoke was found to be issuing from several places where breaks had occurred in the strata. These breaks upon exposure are immediately filled in with sand and clay, to prevent air from reaching the seat of actual fire.

The ventilation system consists of four fans. One each of Schiele and Hayes type are situated at Mine Creek, and ventilate the old workings and pillar sections of the mine. The others, of "Sirocco" type, are placed in the Mangatini and West sections, and are actuated by compressed air. Rules posted, and reports to date.

Denniston Collieries (J. Dixon, district manager; J. C. Brown, local manager).—These collieries still maintain a large output. For the year 1910 the total quantity of coal won from the two mines was 347,719 tons, or 616 tons less than the output for the previous year. The development-work of both mines continues well in advance of all requirements. A high percentage of coal continues to be won from the various sections where pillar-extraction is carried out.

Coalbrookdale Mine (C. W. Dixon, mine-manager).—(3/11/10): Lady Glasgow section, or right-hand side: The whole of the output from this section is derived from pillar-extraction. In the upper levels the usual crush or movement consequent upon the withdrawal of pillars is noticeable. In this section, ten pairs of miners are employed, and to look after their safety one underviewer, two deputies, and three timbermen are continually moving to and fro amongst the miners.

Dip section, Cascade: For the purpose of opening up a large area of virgin country known to be coal-bearing, a new dip having a south-west trend has been set out from the end of the present Cascade main haulage-rope road. The drive, which at present is partly in coal and stone, is 9 ft. by 6 ft. in the clear—*i.e.*, measured inside timbers—and it is estimated the total length of driving will not exceed 8 chains before the field is reached.

No. 9 section: In this section pillar-extraction is the main source of supply, the whole height of coal (12 ft.) being worked to a hard sandstone roof.

No. 8 section: This extensive area continues to open up satisfactorily. The headings are driven in a north-east direction, and as they advance the coal lying to the dip of Munsie's section can be won.

Wallace's section: The solid workings in this section, being completed, will enable the pillars from this and the East or old left-hand side workings to be withdrawn.

Munsie's section: Having exhausted all available solid and pillar coal, this section of the mine was closed down on the 5th August, 1909. The percentage of coal won from the extraction of the pillars was satisfactory.

Wareatea section: Work in connection with the development of this field is vigorously carried on. Upon the completion of the surface rope-road (15 chains in length) it is intended to immediately install the endless-rope system of haulage for a distance of 35 chains (tunnels have already been driven for upwards of 20 chains) to connect with Bradley's section. The latter section, in which there are a large number of working-places, has been closed for two years, pending the completion of this new haulage-road. Therefore a decided increase in output from this mine should be looked for in the near future. The mine throughout is both well timbered and ventilated.

Ironbridge Mine (Thomas Thomson, mine-manager).—(2/11/10): In the various sections of the mine, operations throughout the year have proved satisfactory.

Old Tunnel section: In this old section, which was formerly the main haulage-road from the workings to the tip at Denniston, pillar-extraction continues to furnish all supply.

Shaft section: To the rise of the free water-level, pillars continue to be withdrawn. To prove an area of coal some 5 acres in extent, a dip is being driven from the water-free level. The coal showing in the face of the dip is of excellent quality, and 12 ft. in thickness. Off this dip, several ordinary working-places have already been turned away.

The whole of the output from Kiwi, No. 4 and No. 2 (Big Pillars) sections, is maintained by pillar-extraction. The pillars in all of these sections are working homewards, and are adequately timbered.

Deep Creek: All places are confined to solid workings. The coal in the various faces is of good quality.

Kruger's and No. 7 sections: In these two sections the headings, which are driven in the bottom seam, have already opened up a large area of coal, and it is anticipated that these headings will eventually effect a holing into the workings of the Shaft section. The development of No. 2 dip has proved an extensive area of excellent coal from 10 ft. to 12 ft. in thickness. The main headings going north-easterly have already been driven upwards of 10 chains, and the coal has maintained its continuity and thickness throughout the whole length of driving.

The ventilation of the various sections of the mine is excellent, and timber is freely used throughout the whole of the mine. The lighting of the main haulage and trucking roads by electricity is being pushed on, and, when completed, should be of great assistance to those whose work lies in this direction.

Rocklands Coal-mine, Buller Road (George Walker, owner; J. Burley, permit).—(11/11/10/): Work in this mine has been very intermittent, and is regulated by dredging demands. The output from the mine has been principally won from the extension of the main south heading. The working-faces and the mine generally were found in a very satisfactory condition. Two men employed. Rules posted.

Whitecliffs Coal-mine, Buller Road (Job Lines, owner; S. Smeaton, permit).—(11/11/10): A new tram-line, 5 chains in length, necessitating the bridging of Coal Creek, has been completed. From here a low-level tunnel has also been set out, which will enable the coal lying to the west of the old workings to be won with safety. This level is driven 6 ft. 6 in. by 6 ft., inside measurements, and is timbered throughout with heavy black-birch 10 in. diameter. Rules posted.

Archer's Freehold, Capleston (F. W. Archer, owner, permit).—(16/11/10): For the first six months of the year very little work was done on this property, which contains two excellent seams of coal from 10 ft. to 12 ft. in height, separated by sandstone, exceeding 60 ft. thick. Both seams were worked simultaneously, but present operations are confined to the bottom seam. The ventilation of this section has at times been very sluggish, but should now be satisfactory, as it was anticipated a second outlet would be holed within a few days of my visit. The mine throughout is timbered in a very creditable manner. Two men employed underground. Rules posted, and reports to date.

Coghlan's Freehold, Capleston (J. Coghlan, owner, permit).—(16/11/10): No. 1 tunnel has been extended a total distance of 700 ft., from which bords are turned at regular intervals of 60 ft. Early in the year a second outlet was provided to the rise of No. 1 level, without which mining operations would be impossible at this level. No. 2 level: Driving this level for 350 ft. (all in stone) constitutes practically all the work done here. On the above date no coal of value had been proved, the heading-face standing in soft sandstone. Two men employed. Rules posted, and reports to date.

Burke's Creek Coal-mine (Messrs. Gibson and Harris, owners; A. Hamilton, mine-manager).—(16/11/10): No. 1 south heading: This heading continues to be driven by two shifts of workmen, and a holing should shortly be made with No. 2 main south heading. This heading should open a large area of coal and greatly improve the ventilation of the mine. The coal from the southern section of the lease, which was worked by the former owners by tunnelling, continues to be successfully extracted by opencast method.

No. 1 North area: To win the coal from this section it was found imperative to construct a short incline tramway, 4 chains in length, with a mean gradient of 1 in 2·8. Upon completion of this work the heading was set out, and on reaching a driven distance of 100 ft. met a small fault, which, on continuation of the level, was found to be 34 ft. in width. On above date, coal of superior quality and hardness to anything previously worked on the property was showing in the face.

The timbering and ventilation throughout the mine are satisfactory. The thorough development of the mine is receiving every attention, and the main south heading is being pushed forward with all reasonable speed. Since last year the tramway to connect with the Government railway at Reefton Station has been completed, and thereby the output from the mine has greatly increased. Six men employed underground. Rules posted, and reports to date.

Lockington's Leasehold, Burke's Creek, Reefton (E. Lockington, owner, permit).—(16/11/10): This small mine has been thoroughly restored, all small coal and pyritical stone having been removed from the workings. The old system of loading coal by chutes has been replaced by self-acting inclines. By such haulage the owner will be able to supply a much larger and better class of coal. The ventilation of the mine has been greatly improved, and brattice cloth is now taken to within a few feet of each working-face. Two men employed below ground. Rules posted, and reports to date.

Waitahu Coal-mine, Reefton (James Judd, owner, permit).—(16/11/10): The greater part of the output from the mine has been won by the dropping of the top coal along No. 2 level, which has been thoroughly retimbered. In No. 1 level (top seam) no mining has been carried out for some considerable time. Owing to the aerial tram-line which spans the Waitahu River having been several times during the winter months carried away by floods, considerable difficulty has occasionally been experienced in procuring sufficient mining timber for the regular working of the mine. Three men employed. Rules posted, and reports to date.

Reefton Coal-mine (J. Billett, owner, permit).—(19/11/10): To again open this mine, which had been closed through unsatisfactory timbering in the inby workings, a narrow incline is being driven through the pillars, about 4 chains nearer the entrance to the tunnel than the former jigs. On a holing being effected an effort will be made to pick up the working-faces, which at present are standing intact. The ventilation of the mine has greatly improved since the completion of a second outlet. Two men employed below ground. Rules posted, and reports to date.

Phœnix and Venus Coal-mine, Murray Creek (J. Knight and Co., owners; W. Knight, permit).—(17/11/10): In March last a crosscut was driven from No. 4 to No. 3 level to the top seam; from this a rise was immediately put up to a height necessary to leave pillars large enough to maintain the stability of the main trucking-road. From thence levels were driven east and west, and, with the exception of a few tons of coal won by opencast method in the extreme south-eastern portion of the field, all the output has been won from these levels. The timbering and ventilation are satisfactory. On the above date very little smoke was noticeable from the burning area to the south of the lease, this being due to the incessant rains that had fallen during the winter months. However, on again visiting the mine on the 17th January, 1911, smoke was again issuing freely from several places.

Watson and Moyle's Coal-mine, Murray Creek (W. Watson, permit).—(17/11/10): On the continuation of the main south level the coal continued of a friable nature. Work has therefore been abandoned in that direction, and a dip set out to prove the coal going east, but, so far, with little success. The natural ventilation of the mine is well maintained, and the timbering is satisfactory. To the extreme west of the lease the owners have for some time been opening a small pillar area, the coal from the solid or first working having been won in the early stages of the mine. Two men employed. Rules posted, and reports to date.

Golden Treasure Coal-mine, Murray Creek (James Billett, owner, permit).—(17/11/10): Two men continue to be employed here winning coal by opencasting. A small area of coal recently discovered will add materially to the life of the mine.

Lankey's Creek Coal-mine (Progress Mines of New Zealand (Limited), owners; D. Turnbull, permit).—(17/11/10): No. 1 Mine: On the extension of the main level for a further distance of 150 ft. the coal became of a very poor quality and practically useless; consequently all solid work in this section of the mine has been abandoned, and permission has been given the manager to extract these pillars, as by their extraction now when the timber is sound a larger percentage of the coal will be won than would otherwise be the case were they allowed to stand until the timber would decay and heavy falls take place throughout the mine. The eastern section gives every indication that a small block of coal may be looked for in this direction. The timbering of this mine is satisfactory, and the ventilation adequate. Six men employed. Rules posted, and reports to date.

Merrijigs Coal-mine (McGee and Osborne, owners; J. Osborne, permit).—(18/11/10): On the further prospecting of this property the coal showed no improvement in thickness or quality. Therefore the owners, after having incurred considerable expense in opening the mine, abandoned the project in May last.

Loughnan's Coal-mine (William Bierwirth, owner, permit).—(18/11/10): The pillars to the west of the main fault-line continue to be satisfactorily withdrawn. To win the coal lying to the east of this fault it has been found necessary to open up and retimber an old adit-level. However, to win the coal lying to the dip of the present workings a stone drive will have to be driven for some considerable distance, or otherwise pumps capable of dealing with a large amount of water will have to be installed. Three men employed. Rules posted, and reports to date.

Kearns' Coal-mine, Merrijigs (R. L. Kearns, owner, permit).—(18/11/10): From this mine, which was formerly owned by Loughnan, the present owner has been able to win upwards of 300 tons of coal from pillar-extraction. These pillars were considered as lost until the mine was taken up by Mr. Kearns. In their extraction timber was freely used, and every precaution taken for the safety of the workmen.

Golden Point Coal-mine, Merrijigs (R. L. Kearns, owner, permit).—(18/11/10): Work in this mine has been intermittent. The only period during which work was any way constant was when the Town Belt Mine was closed down to allow repairs to the timbering along the main level. Two men were usually employed.

Blackball Colliery (W. Leitch, mining engineer; J. Hamilton, mine-manager).—(14/12/10): Operations for the year have been carried out by two shifts of workmen, and a material increase in the output is shown. The quantity of coal won during the year was 166,505 tons, being an increase of 46,440 tons above the previous year's output. This large increase can in a measure be attributed to the completion of the Government railway from Ngahere to Blackball. The company's coal is now brought direct in Government railway-wagons from the bins at Blackball to Greymouth. The aerial tramway, which did good service in the past, is now disused.

No. 17 bank: A large amount of development has been done in this section of the mine, the heading-face now standing 23 chains from the main level. From this bank six intermediate levels (three east and three west) have been driven forward for 200 yards, the levels going west extending as far as No. 20 bank. A holing has lately been made in No. 3 east level, at the escarpment in Coal Creek, and therefore the ventilation of the inby sections of the mine is satisfactory. The coal throughout this large section is of excellent quality. As the present appliances for dealing with the increased output from this section have proved inadequate, all winning operations have been temporarily suspended here, and preparations are being made for the extension of the main endless-rope system of haulage into this section, the preparatory work for which is being speedily advanced.

Dip: To win the coal lying to the west, and beyond the Government railway-sidings, a dip heading was started some months ago, which in the early stages of driving made considerable progress; but as the heading extended, the volume of water increased, so that the small pump for sinking was working almost to its full capacity. Upon completion of 3 more chains of driving it is intended to replace this small pump by a three-throw Evans pump, capable of dealing with 250 gallons of water per minute. The usual trouble with spontaneous heating of the coal, more so where pillar-extraction is being carried out, has been successfully dealt with.

Fault: Towards the end of the year it was decided to cut the line of fault met with in the main levels last year. From geological examination, immediately in front of these levels, it is estimated that an area of at least 200 acres of coal will be available to the rise of the main levels. Some of the outcrops show 20 ft. of hard bright coal.

Drainage-adit: Owing to the *débris* from the railway-works and Blackball sidings filling up the bed of the creek above the mouth of the water-level, it was necessary to extend the drainage-adit some 400 ft. down the creek. The Public Works Department contributed to the cost in ratio to the amount of *débris* put into the creek.

Surface: No new surface works of any magnitude have been undertaken during the year.

Volume of air entering the mine, 62,780 cubic feet per minute. Rules posted, and reports to date.

Paparoa Colliery (J. Hayes, mining engineer; D. S. A. Patterson, mine-manager).—(13/12/10): This colliery has now been in operation for eighteen months, and has produced a total output of 43,795 tons. The output for the year ending 31st December, 1910, was 36,596 tons, an increase of 29,397 tons over the previous year. The whole production has been from Nos. 1 and 2 seams, where a large amount of development has been carried out, as well as in the No. 3 seam. From the main level in No. 1 seam two headings have been set out to the eastward to the full rise of the seam, and it is anticipated these headings will open up a large area of coal in this direction. Some six months ago the old method of lowering the coal from Nos. 1 and 2 seams was replaced by the endless-rope system of haulage. The load on this length of haulage-road is controlled by an hydraulic brake stationed at the Soldier's Creek or upper end of tunnel. The main ventilating-tunnel, gradient 1 to 1 for a distance of 200 ft., and which connects Nos. 2 and 3 seams, was completed on the above date, and should prove a decided advantage to the general ventilation of the mine. The workings are adequately ventilated in three splits, as under: Entry No. 1 seam, 23,850 cubic feet per minute; entry No. 2 seam, 32,400 cubic feet per minute; entry No. 3 seam (one pair of miners), 4,000 cubic feet per minute. Total volume of air entering the mine, 63,250 cubic feet per minute; total volume of air in main return, 60,250 cubic feet per minute. The difference may be attributed to leakage through the use of single separation doors between the intake and return airways. With the object of testing the suitability of the coal for coking, a few tons were sent to Australia for practical test. The coke is of very good quality, specially suited for use in blast furnaces, and compares favourably upon analysis with the best cokes of the world. The timbering of the mine is good, and all requirements of the Coal-mines Act are complied with.

North Brunner Colliery (George Smith, mine-manager).—(10/12/10): Early in February development-work at this colliery had so far advanced as to permit of coal being carried from what is locally known as the 16 ft. area to the bins at Stillwater. After opening up this seam, and after a considerable amount of driving, the coal continued soft and friable. Operations on this section were then discontinued. The construction of the incline to the upper seams, situated at a height of 1,385 ft. above sea-level, and a distance of 76 chains from Stillwater, is now being carried out. At this point an opening was made in the top seam, which at the outcrop showed coal of excellent quality and hardness, but on being driven on gradually became softer, and has remained so. Two main levels have been driven to the south of the main heading for a distance of 14 and 13 chains respectively. In both levels a

large amount of faulting is observable. With a view to opening up a section in this area, the usual bords have been turned away, and in nearly every instance the same faulting that crosses the main heading and levels has been encountered. The mean thickness of coal is about 5 ft. 4 in. Every preparation has been made for the rapid development of the mine by opening out on the coal some distance in advance of the main heading-face. The driving of the main level is vigorously carried out by three shifts of workmen. Ventilation throughout the workings of the mine is well maintained by a "Sirocco" fan (25 in. diameter), belt-driven, and actuated by a 5-horse-power Ackroyd oil-engine. With the exception of the adjusting of the various screens to suit requirements, nothing of importance has been done at Stillwater. The coal won from the mine is exceptionally clean, and is in demand by the gas companies, producing from 12,840 to 13,400 cubic feet of gas per ton of coal. It is also valuable as a smithy coal. Rules posted, and reports to date.

Brunner Mine, St. Kilda Section (R. Alison, mining engineer; J. Armstrong, mine-manager).—(6/12/10): Main north heading: At a driven distance of 30 chains a large fault has completely cut out the coal; all solid workings were thereby exhausted, and the extraction of the pillars was undertaken.

East level: Pillar-extraction in this section also continues to be carried out. Owing to the soft nature of the bottom in such pillar areas, which in some instances has lifted or swollen to such an extent that some of the pillars are completely buried, the cost of production is greatly increased. On several of my inspections the ventilation of these sections has not been satisfactory. This in a measure must be attributed to the large amount of black damp, which is freely given off from the goaf (with a low barometer), where pillars have been withdrawn, and at times the volume of air entering the mine proved inadequate to dilute these gases. However, this unsatisfactory state of the ventilation has been entirely overcome, and the mine is now well ventilated.

No. 1 low-level tunnel: All operations have been suspended here for some time, as the coal on being driven on remained soft and unmarketable.

No. 2 low level: This level continues to be driven on practically the same bearing as the Rise section of the mine, but at a much lower level, and has now been driven a total distance of 10 chains. The coal in the face is of good quality, and gives every indication that a block of coal may be won in this direction.

Rules posted, and reports to date.

No. 1 Point Elizabeth State Colliery (James Bishop, mining manager).—The net marketable quantity of coal produced from this colliery for the year ended the 31st December, 1910, was 212,888 tons 12 cwt., a decrease of 3,336 tons 6 cwt. compared with the year 1909. This decrease of output is attributed partly to labour troubles during the early months of the year, and partly to extra stoppages owing to weather-conditions interfering with the shipping.

No. 1 section (J. Coulthard, mine-manager).—(7/12/10): To the west of the main dip, only two places are now working in solid coal. Upon completion of these two places the whole of the area on this side of the dip will be standing on pillars, many of which, owing to the bad nature of the roof and a water zone immediately overlying same, it will be impossible to totally extract, and recourse to splitting only must be adopted. No. 3 west section: In this section the pillars are already being split and robbed to the fullest extent, with due regard to the safety of the workmen and the prevention of influx of water. East side Extended dip: A few solid places have yet to be completed in the top levels, but the pillars are being split in the bottom levels. In order to maintain the stability of the roof, and prevent any heavy falls from taking place, it has been considered necessary to leave a small block of coal of inferior quality along the main fault-line. No. 2 east level: As the coal here is rapidly thinning, work has been temporarily suspended until such time as the present longwall work has been completed, when it is intended to again resume work in this section by longwall method. No. 1 east level: All coal won here is mined on the longwall advancing principle. It ranges from 3 ft. to 5 ft. in thickness, and is overlain by a strong sandstone roof. The mine is well timbered throughout, and excellently ventilated. Quantity of air entering the mine, 46,870 cubic feet per minute. Although this section could not be classed as fiery, all parts are worked by safety-lamp, thus providing in a practical manner against the chances of accident from this source. In order to relieve the strain on the compressors, preparations are well in hand for the installation of a steam haulage-engine (to be placed on the surface) to supersede the present air-winch now used for hauling from the extended workings, all available air being required for pumping purposes. Rules posted, and reports to date.

No. 2 section (J. Herd, mine-manager).—(8/12/10): The whole of the output from the top seam in this section is solely derived from the extraction of pillars. In Nos. 2 and 3 east levels the coal ranges from 10 ft. to 13 ft. in height, and is mined in two operations (in mining parlance, caunching or benching). The top part, to a height of 5 ft. to 6 ft., is first won, and short punch props used until such time as enough of the bottom coal is removed to allow of the setting of the longer permanent timber. From No. 1 east level the output is also maintained by the withdrawal of pillars, the coal being about 6 ft. in height. The pillars are kept well in line, and form a creditable section of pillar-work. Throughout the Extended dip the few remaining solid places continue to be double-shifted. The most satisfactory feature in connection with the working of this section is that the bottom seam, which is separated from the top seam by sandstone from 20 ft. to 30 ft. in thickness, is proving more extensive than was anticipated, and should provide work for a number of miners for some considerable time. The total volume of air circulating in this section was 48,000 cubic feet per minute. Rules posted, and reports to date.

For some time past the pumps in both sections of this colliery have been dealing successfully with the water in the dip workings.

No. 2 Point Elizabeth State Colliery (James Bishop, mine-manager).—(9/12/10): Good progress continues to be made with the development of this new colliery. The work in hand includes the driving of tunnels, and incline formations, and the erection of a trestle-bridge at the upper end of incline. This bridge is now nearing completion. The coal-mine mentioned in my report of last year as supplying coal for the air-compressors has been closed down and effectively fenced. The air to actuate the rock-drills in No. 2 tunnel is brought by pipe-line from the compressors at the upper end of incline. The two main levels, through which all the output from the mine will eventually be conveyed, have been extended upwards of 7 chains (the coal maintaining a thickness of 14 ft.), and are well ventilated by a small Hayes fan. Little or no timber is used in these levels, as they are being driven narrow and the roof stands well. The railway-construction under the Public Works Department is making good progress. A commencement has been made to lay the permanent-way, which in a few months should be completed, when the further development of this property will be greatly facilitated.

ACCIDENTS.

Of the number of accidents reported as coming within the meaning of section 62 of the Coal-mines Act, 1908, eleven were fatal and seven non-fatal. Of the persons killed, eight were underground at the working-face, two were run over by trucks in the mine, and one was crushed against the roof by the brake-handle of a jig-wheel. In one accident two miners were killed by a heavy fall of coal whilst engaged in the extraction of a pillar.

Fatal.

Blackball Colliery.—(28/1/10): Herbert Gilbert Harris, trucker, killed by runaway truck.

No. 1 Point Elizabeth State Colliery.—(7/2/10): George Downs, miner, killed by fall of coal and stone from the face.

Millerton Colliery.—(9/3/10): Thomas Moloney, miner, killed by fall of coal after firing shot.

Coalbrookdale Mine, Denniston Collieries.—(19/7/10): E. G. Lennie, miner, killed by crush against truck through fall of coal.

North Brunner Colliery.—(13/8/10): Thomas Compton, trucker, killed by crush against pillar through runaway trucks.

No. 1 Point Elizabeth State Colliery.—(27/9/10): Thomas Baker, miner, killed by fall of roof-stone.

No. 1 Point Elizabeth State Colliery.—(3/10/10):—John Henry Johnston, miner, killed by fall of coal from the face.

Ironbridge Mine, Denniston Collieries.—(26/10/10): John Muir and James Bowers, miners, killed by heavy fall of coal whilst extracting pillars.

Millerton Colliery.—(23/11/10): Edward John Quinlan, miner, killed by fall of coal from the face.

Ironbridge Mine, Denniston Collieries.—(14/12/10): Gilbert Rutledge, trucker, killed by being crushed against roof by brake-handle of jig-wheel.

Non-fatal.

Ironbridge Mine, Denniston Collieries.—(2/3/10): William Trevett, trucker, sustained fracture of right thigh and laceration of muscles of left arm by crush from runaway truck.

Coalbrookdale Mine, Denniston Collieries.—(5/3/10): Joseph Robinson, miner, sustained crushed head, fracture of both jaws and roof of mouth by fall of coal from the roof.

Coalbrookdale Mine, Denniston Collieries.—(23/3/10): William Wallace, deputy, sustained fractured pelvis and internal crushing by fall of coal from the face whilst setting jig-prop.

Ironbridge Mine, Denniston Collieries.—(16/7/10): Michael McTigue, trucker, sustained severe crush between truck and roof whilst riding on full truck.

Paparoa Colliery.—(15/9/10): Frederick Hamilton, miner, sustained fracture of left leg by fall of coal and timber.

Westport-Stockton Colliery.—(17/10/10): David Roberts, miner, sustained fracture of several ribs by fall of coal from the face.

No. 1 Point Elizabeth State Colliery.—(8/12/10): Thomas Braithwaite, miner, sustained fracture of left leg and internal crushing by fall of stone.

I have, &c.,
A. G. MARSHALL,
Inspector of Mines.

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

SIR,— Inspector of Mines' Office, Dunedin, 31st March, 1911.

In accordance with the requirements of section 78 of the Coal-mines Act, 1908, I have the honour to present my report on the coal-mines in the Southern Mining District for the year ended 31st December, 1910.

CANTERBURY.

Springfield Colliery, Springfield (Christchurch Brick Company, owners; T. N. Horsley, secretary; James Taylor, permit, mine-manager).—(29/7/10): Thin coal-seam, 18 in., and fireclay, 5 ft., worked together. A level is being driven through old workings to the pumping-shaft for drainage and extra ventilation. Workings in good order, and timber systematically used for support of roof. Substantial ladderway provided for travelling-way in upcast air-shaft. Hugh Patterson, sixty, certificated winding-engine driver, fell down the winding-shaft, 70 ft., on the 20th July, and sustained dislocation of neck and other injuries, dying almost immediately. The horizontal bar provided for use across the entrance of the shaft had presumably been removed and not replaced by deceased, who also acted as banksman and onsetter at this small pit, the shaft being used for winding material only. During the year 1,842 tons of fireclay were mined.

Springfield Fireclay-mine, Springfield (Christchurch Gas, Coal, and Coke Company, owners; R. English, general manager; W. Wilson, permit, mine-manager).—(10/5/10): This clay-mine is worked almost entirely for fireclay used at the company's pottery-works, Christchurch, and 1,086 tons were mined during the year. The new dip is being driven to the boundary. Timber used regularly, and drives in good order. Ladderway complete in upcast air-shaft. Report-book kept, and rules posted.

Sheffield (Austin's) Fireclay-mine, Sheffield (John Austin, owner).—(10/5/10): Seam of clay, 8 ft., all worked. Timber used as required, and workings in good order. The clay is railed to Christchurch for manufacture at the pottery-works there. Fireclay to the amount of 1,220 tons was mined during the year.

Homebush Colliery, Glentunnel (John Dean's trustees, owners; J. C. Campbell, mine-manager).—(21/12/10): Old main level pillars now almost exhausted. No. 1 mine—Dip section: Coming homeward with pillars on both sides of the dip. On north side pillars are drawn to outby No. 1 heading up to the fault. Floor heaving badly, and consequent difficulty in maintenance of air-courses. South side: Pillaring backward, first taking strip off low side. Ventilation in the lower working-place was not quite up to the mark owing to brattice being too far back; this the manager rectified. Approved magazine in order for storage of explosives. The new prospecting dip drive is at 180 ft. to the face, and passing through what seemed to be troubled measures. Fireclay and pipeclay: 6,101 tons were obtained, chiefly on the surface works, for manufacture of ware on the premises.

St. Helens Colliery, Whitecliffs (Crown lands; Levick and Thin, lessees; W. Thin, permit, mine-manager).—(21/12/10): As indicated in last year's report, the heating in "gob" to north side of dip haulage-way gradually developed until the clay and wood stoppings became incapable of altogether withholding the foul gases. Thereupon work in the lower level south was suspended, and water allowed to rise with the object of diminishing the "fire." Meanwhile a level is being driven in the rise coal pillar for production of output, which is not large. In any case, in this mine there only remains a proportion of pillar coal for extraction which the energetic lessees hopefully expect. Care is taken in mining, and timber is well used.

Mount Somers Colliery, Mount Somers (Mount Somers Coal Company, owners; George Nell, secretary; J. S. Hamilton, mine-manager).—(6/5/10): No. 1 or Woolshed Creek Mine (freehold): Mine reopened for withdrawal of pillar coal at one place for sample purposes. Plenty of timber in use for security of roadway. The new prospecting-drive has proved unsuccessful at angle driven, being on the upper part of coal-seam. It is quite evident that the payable coal-seam, if existent, lies in the dip, as to proving which the proprietors do not seem prepared to go to the expense.

No. 2 Mine (Crown lands): Main levels to the rise met with soft coal, apparently the marginal incrop of the seam, which, with "washout" on northern boundary, indicates limitation of the coal-seam in those directions. Rise pillars are being drawn homeward, a good roof-break having been obtained by the overlying gravel having subsided; a minimum quantity of timber is therefore necessary. Ventilation fair, rules posted, report-book and plan kept. Blasting-powder apparently carefully handled.

Subsequently (about November) a heating was noticed in the waste, and, giving off black damp, necessitated a line of stoppings, which the manager reported favourably upon towards the end of the year.

Albury Coal-mine, Albury (Crown lease, Chamberlain Settlement; Robert Riddle, lessee; Hugh Gray, permit, mine-manager).—(21/9/10): The drive is turned away to the dip, and a fresh level is being won in coal above the average in thickness (8 ft.). Stoppings between the new and the old workings are in good order and condition, and there is now no evidence of the incipient fire which occurred in February last and which is no doubt extinguished by accumulation of black damp in the waste of pillar-workings.

Charles E. Riddle, lessee and permit-holder, was suffocated by black damp in the mine on the morning of the 5th February last. A spontaneous fire of small moment had been getting up, and Riddle, contrary to advice, had evidently entered the mine alone. His body was found 70 ft. in, almost within sight of daylight. I reported this occurrence to you fully under date 14th February.

G. C. Kidd's Prospecting Area, Rosewill Settlement, Albury.—(21/9/10): Prospecting-drive, put in to test the ground for a seam of coal which is said to have been worked in the early days, tapped old workings, which gave off water and black damp, and the drive was discontinued. After putting in other drives (equal to 200 ft. of driving) without success, the license-holder has given up the attempt to reopen this mine, and the area is now abandoned.

Stony Creek Coal-mine, Waihao Forks (Alexander Allan, owner; D. L. Watson, lessee and permit, mine-manager).—(20/9/10): A new drive has been put in 50 yards from the face of the terrace, 40 yards in "black coal" (inferior and unsaleable), when the brown coal was struck, and this is said to be of fair quality and saleable. Drive 6 ft. square, no timber required, cover being shallow and roof of lignite. Like other small mines which have been put in on this property during past years, there are indications of the areas of workable lignite being limited.

NORTH OTAGO.

St. Andrew's Colliery, Papakaio (Thomas Nimmo, permit, owner and manager).—(16/6/10): Mine in excellent working-order, and ventilation good. The seam, however, shows indications of incropping, which is not unusual in this class of coal in Otago and elsewhere. Rules posted, report-book and plan kept.

Prince Alfred Colliery, Papakaio (Mining reserve; Abel Beardsmore, permit, lessee and manager).—(16/6/10): On entering the mine incipient fire-smell became discernible, and was traced to a fallen place, necessitating three stoppings being put in, which the manager subsequently wrote me had been done and the mine cooled down. Otherwise, mine in good order, and new dip workings being opened satisfactorily.

Ngapara Colliery, Ngapara (William Nimmo, permit, owner, and manager).—(14/6/10): Mine in good working-order, and ventilation excellent. In this strong seam a minimum quantity of timber is used or required for roof-support. Any blasting necessary is, for safety, conducted by the mine-manager himself at the close of the day's work. Rules posted, and report-book duly kept.

Shag Point Colliery, Broadleaf Mine, Shag Point (George W. Brooke, permit, lessee and manager).—(17/6/10): A new entrance has been made on the fringe of Hunt's old workings, and a seam 5 ft. in thickness met with. Communication having been made with Hunt's workings, there is sufficient air passing for ventilation, but the fallen roadway will not permit of travelling. However, that will readily be overcome when the heading now being driven to daylight is completed.

Shag Point Coal-mining Company, Shag Point (Shag Point Coal-mining Company, lessees; J. O. Gilmour, secretary; E. Clarke, mine-manager).—(17/6/10): The new dip drive at 150 ft. tapped a 3 ft. seam of coal, which is being worked on longwall system. A seam of "bat" makes convenient stowing, and "gob" is well packed. Timber systematically used for roof-support, consequently workings safely secured. Ventilation fair. Owing to the midwall in main drive being of timber, which is liable to take fire—but not likely to do so on account of dampness—I recommended that a separate second outlet be provided, and this the owners stated would have their early attention. The lessees are a party of working-miners formed into a private company.

Allandale Colliery, Shag Point (A. McIntosh and Sons, lessees; Allan McIntosh, mine-manager).—(19/9/10): The mine plant has been drawn and the workings abandoned. The water is rising slowly in the engine-plane. A cross-measures dip drive at 450 ft. struck the coal-pillars left in workings twenty years ago. On the dip side the roof and floor are met tight, while to the rise the old drives are more open, and air is travelling to the upcast air-shaft, where a tall timber stack has been raised. It seems that an area of pillars was left in during first working, and prospecting-drives are being put in to northward and eastward to recover these. Air in one drive is to be improved by putting a stenton through.

SOUTH OTAGO.

Fernhill Colliery, Abbotsford (Fernhill Coal and Sand Company, owners; James Gray, manager).—(29/12/10): Ventilation good, and working-places kept in safe order. A decreased output is being obtained from pillar and head coal in workings opened some years ago. Some smell of fire in the air was coming from a stopping, which was receiving attention.

Freeman's Colliery, Abbotsford (Freeman's Coal Company, owners; R. Green, general manager; A. S. Gillanders, mine-manager).—(29/12/10): A newly installed ventilating-fan is in good working-order, being actuated by a 10-horse-power Tangye engine driven by producer-gas, which is generated from brown coal produced at the colliery. With fan at 380 revolutions, Wg. 1 in., volume of air circulating equals 20,000 cubic feet per minute. Ventilation adequate, with the exception of two north-going places at the bottom of No. 7 dip, where stentons not through, and the bords were driven too narrow for brattice. The manager promised to rectify this by having stentons driven at more frequent intervals. Otherwise the colliery is in good working-order, and practically free from accidents. Timber is well supplied and capably used. The completion of No. 8 dip haulage-way will permit of fresh air being taken direct around the working-places. A travelling-way separate and apart from the haulage-roads is provided for the underground workmen. Rules posted; plan and report-books to date.

Green Island Colliery, Green Island (Green Island Minerals Company, owners; J. Louden, managing director; T. Barclay, jun., mine-manager).—(30/12/10): No one was about on the occasion of this visit, but there was ample evidence of the colliery being in working-order. Rules posted; report-book to date.

Jubilee Colliery, Saddle Hill (Jubilee Coal Company, owners; A. P. Bremner, general manager; Thomas Barclay, mine-manager).—(30/12/10): Induced probably by thinness of seam and proximity of faults, a "creep" set in in the dip workings, and the area is now abandoned. Owing to heating on the fringe of waste of pillaring area, a line of wood and ash stoppings has been built which effectually retains "gob" odor. A new break on the pillar-line is being induced successfully. Roof fairly good considering height (up to 14 ft. in places), for which long timbers are provided. Furnace-ventilation adequate, and requirements of the Act generally well observed.

Burnweil Colliery, Saddle Hill (Adam Harris, owner and manager).—(23/12/10): After being worked for a period of twenty-nine years, this mine is now practically exhausted, and is about to be abandoned. Prospecting on the south-westerly part of the property has been carried on to a limited extent, without adequate result.

Saddle Hill No. 1 Colliery, Saddle Hill (Christie Bros., owners; W. W. Ogilvie, mine-manager).—(23/12/10): Owing to spontaneous incipient fires in the waste, fire-stoppings of brick and sand had been built, which are well looked after and kept in good order. Through encroachment of pillaring work the recent ventilating-shaft has become disused, and, pending connection with a new shaft (almost completed), natural ventilation is in vogue, an adequate supply of air being well conducted by brattice close to working-faces. Pillar-extraction conducted safely. Requirements of the Act generally well observed.

Saddle Hill No. 2 Colliery, Saddle Hill (Christie Bros., owners; Robert Hill, mine-manager).—(23/12/10): The creep which affected the far-in workings is still manifest, but, roof and floor having met, there is less cause for apprehension regarding longevity of the mine. Roadways are brushed in head coal, and pillars extracted as formerly. Some heating which had arisen in the crushed coal and fallen ground had been disposed of by filling the stuff away. Owing to the fan for ventilating purposes, there has been no difficulty with the ventilation of the mine-workings, which is and has been highly satisfactory. The mine is in good working-order, and care is exercised for prevention of accidents. Rules posted; plan and report-books kept to date.

Lauriston Colliery, Brighton (James Walker, owner; Robert Walker, permit, manager).—Workings in good order, and ventilation adequate. The seam to the rise is intercepted by the fault or "want," and coal is being stripped off the near side. So far no effort has been made to pierce the fault, there being a sufficiency of coal in view for present requirements.

Brighton Colliery, Brighton (D. L. McColl, owner; A. McColl, permit, manager).—The tunnel continues to give trouble, owing to side and roof pressure, and timber renewals require to be frequent. The new mine drive not yet begun is expected to be commenced shortly, and the old drive will then be used as a drain. Seam low, 4 ft. Working-places in safe condition. Ventilation good.

Waronui Colliery, Milton (Bruce Railway and Coal Company, owners; J. R. Wilson, general manager; James Carruthers, mine-manager).—(28/10/10): Ventilating-fan at 250 revolutions, circulating 16,625 cubic feet of air per minute, Wg. $\frac{5}{10}$ in. The new easterly dip is in coal a distance of 750 ft.; seam, of good quality, is 18 ft. in thickness. A new electric plant is being laid down for dip pumping and haulage. The mine is in good order, and requirements of the Act are generally well observed.

Lakeside Coal-pit, Lovell's Flat (G. E. Royds, owner).—Pit worked for private and local requirements. Thirty tons produced during the year.

Taratu Colliery, Taratu (Taratu Coal and Railway Company, owners; G. R. Cheeseman, general manager; Thomas Shore, mine-manager).—(27/10/10): Ventilation good, and working-places in good order. The roof in dip-going places is not self-supporting, and measures are required for dip haulage and pumping, so that extraction of coal may be kept to the floor or pavement, by which means alone the roofing may be expected to stand. Rules posted; report-books and plan to date. Black damp has not been reported, and firedamp has not been seen in the colliery. At one place, under a fall in old No. 10 bord where there was heating, the fallen coal and clays are being filled away.

Port Arthur Coal-pit, Kaitangata (Morrison Bros., owners; Robert Penman, permit, lessee).—There were 270 tons of coal raised from this small pit during the year.

Hawthorn Den Coal-pit, Kaitangata (Thomas Cunningham, owner and permit-holder).—(30/11/10): No one about, and seemingly not much doing here at present.

Wangaloa Coal-pit, Wangaloa (Joseph Smith, owner).—(30/11/10): No one about, and indications point to a decreased output from this small mine, which is worked to supply the requirements of settlers in the district.

Kaitangata Colliery, Kaitangata (New Zealand Coal and Oil Company (Limited), owners; O. G. Lockhart, secretary, Dunedin; W. Carson, mine-manager).—(14/12/10): The new ventilating-fan (electrically driven) is 10 ft. diameter; with 18 amperes, at 180 revolutions, a volume of 32,500 cubic feet of air per minute is circulated, Wg. $1\frac{2}{10}$ in. The fan is substantially erected, having cast metal casing, and is giving increased efficiency at three-quarter speed. Early in the year a fire broke out in the engine-room on surface, causing damage to the winding-engine, air-compressing engines, and dynamo; pending repairs temporary arrangements were made whereby only slight loss of working-time was made. Owing to shortage of water locally for fire-prevention and other purposes a storage-dam is being made, which will command the surface works and will be supplied by pumping from the Clutha River. As the north-side section has proved unprofitable, owing to the thinness and troubled nature of the seam, also difficulty and cost of maintaining roadways and air-courses owing to poor roof, it has been decided to withdraw from this quarter, when it will be stopped off permanently. Ventilation generally will then become greatly relieved, as, owing to length of airways of contracted areas in this section, friction of air is considerable and proper circulation rendered difficult. Development is proceeding steadily to south and east in No. 5 dip, south extension, Oliver's dip, and Nos. 20 and 21 dips, in coal of good quality. The usual method is continued of working out comparatively small sections, taking pillar and head coal and leaving coal-barriers, afterwards closing with permanent ash or sand fire-stoppings. As previously indicated, the angle of dip and rise of the seam has undergone a radical alteration from steep to comparatively flat or undulating floor, thus taxing the ingenuity of the management to provide efficient haulage. A "creep" which set in in McGhie's level section caused a good deal of dislocation in the conduct of work and the ventilation, but the effects of same are now practically subdued. Firedamp in small quantity is occasionally met with in certain rise places, and usually in solid workings, more especially where "rolls" occur. Brattice is freely used, and such places kept clear by ventilation, failing which workmen are withdrawn temporarily; reports of these occasions are not numerous. Shot-firing is allowed in terms of special rule 25 in the appendix to the Act. Experiments have been made with low-flame explosives recommended, with more or less success. A borehole underground at 4,000 ft. from mine-mouth was put down 160 ft. The quantity of water and gas given off indicated the likelihood of the occurrence of another coal-seam. Several complaints were investigated during the year, with remedial results in some instances. Ventilating-fan on surface at upcast air-shaft (which is also the second outlet), also machinery and appliances, are kept

in excellent working-condition. The cage is frequently run, which insures the steam-winch being in order, and a head of steam is always kept on the boiler in case of emergency. The caretaker is a certificated winding-engine driver. Surface arrangements, including loading-bank, workshops, safety-lamp cabin, and explosives magazines, are maintained in good order. There has been no alteration regarding exclusive use of safety-lamps underground, the lamp-station notice being placed at the first cabin on the main intake airway, and beyond this only safety-lamps are allowed. Electric wires used are carried on poles, and are well out of reach from the ground; caution notices are also posted warning persons against contact. The advantages which accrued to ventilation a few years ago by sinking of the present upcast air-shaft, with consequent liberation of occluded gases from the strata and shortening of air-circuit, would seem to indicate the advisability of again taking this question into consideration. A prospecting dip drive from surface is down about 600 ft., and is meant to test the measures lying to southward of former workings. No accidents of a serious nature are reported as having occurred underground in this colliery. On the surface, George Carson, labourer, sustained fractured leg by small fall from face in sandpit; and H. Douglas, banksman, suffered from partial paralysis by, as alleged, tripping and striking his head against a beam.

Castle Hill Colliery, Kaitangata (New Zealand Coal and Oil Company, (Limited), owners; W. Carson, mine-manager).—(27/4/10): Robbing and withdrawal of pillars from carriage-heading section, Jordan's seam south, on the point of completion. Permanent log and ash stoppings are in, and final closure will be made immediately. Ventilation fairly good throughout. Travelling-ways and return airway to ventilating-furnace in good order, but I pointed out to the underviewer the necessity for providing better exit arrangements at foot of upcast shaft for the men in the case of necessity. (30/11/10): On surface—Second outlet shaft-mouth and man-hoisting apparatus kept in order for use when required.

Benhar Colliery, Stirling (P. McSkimming and Son, owners; Colin Murdoch, permit, manager).—(28/4/10): Mine in good working-order. Safety barrier of 2 chains solid coal being left between present and old workings, which are expected to contain a body of standing water. However, these are well surveyed, and no danger is anticipated; in any case, the water standing can only have a low vertical head of pressure in its relation to present workings. Rules posted; plan and report-books kept.

Mount Wallace Colliery, Stirling.—No output. Mine closed on account of fire, which occurred during last year.

Mainholm Colliery, Conical Hills, Waipahi (D. Dickison, owner; W. Lischner, permit, manager).—(8/12/10): Pit in working-order. Owing to fault, bottom rising and seam thinning. Powder-magazine approved for storage of explosives.

Central Otago.

Coal Creek Collieries, Coal Creek Flat, Roxburgh (Crown lease; Barber and Shaw, lessees; J. Barber, mine-manager).—(23/8/10): The mine became closed on account of a spontaneous outbreak of fire on the 10th June, and was flooded with water, which still remains. Opencast work was resumed, and five men are employed. The face being about 40 ft. in height and rather steep in one place, I instructed the mine-manager to have the loose taken down and more batter given, in order to provide for the safety of the workmen below.

McPherson's Coal-mine, Coal Creek Flat, Roxburgh (Crown lease; McPherson Bros., lessees; A. J. McPherson, permit, manager).—(21/4/10): Places fairly well driven, and good pillars being left. Seam of great thickness, estimated at 80 ft. I instructed lessee as to necessity for regular and rectangular pillars being left to provide for future working to the dip. Soft seams occur which affect regularity of development, but this is guarded against as well as circumstances allow. Air good. Rules posted: report-book and plan kept.

Craig's Perseverance Coal-mine, Coal Creek Flat, Roxburgh (Crown lease; James Craig, lessee; S. E. P. Vernon, permit, manager).—(23/8/10): The old workings, where heating occurred several years ago, have been reopened, and stoppings advanced 2½ chains with safety. No vestige of the old mine-fire can now be detected by smell or heat. The stoppings are quite cool, and are kept well painted with clay-wash, and are airtight. An upcast airway has been made closer to level faces, consequently ventilation improved where the men are at work. The dip is being extended in coal of good average quality. Hydraulic pumping and haulage are in vogue at the colliery. Rules posted, plan kept, and report-book to date.

Alexandra Coal-mine, Alexandra South (Crown lease; Messrs. Mathias Bros. and Co., lessees; A. E. Barnes, mine-manager).—(22/8/10): The effect of drawing pillars to dip is visible in heaving roadways and air-courses requiring close attention for ventilation and timbering. In one place appearances indicated heating; but this was said to be due to exhaust steam from the pump lodging in the roof-cavity. I instructed the manager to have a thermometer placed in position, and to record its reading daily in his report-book. Rules posted, plan kept, and report-books to date.

New Alexandra Coal Company, Alexandra South (Crown lease; James Pollock, mine-manager).—(13/12/10): All that area of worked ground to northward of the borough boundary is now abandoned. Pillars have been split and re-split, and as large a percentage of the seam won as considered safe. Remaining pillars in this area are sinking gradually. The floor rising nicely to the roof, and packing tightly against it, renders the stability of the workings doubly secure from an invasion of water from the water-logged gravel stratum in the measures overhead. The wisdom of having limited the width of drives to 9 ft. is now more apparent, there not being a fall from roof of any consequence throughout

the workings; meanwhile the pillars, where extracted, have been worked to advantage. The brick and cement water-dams built in the year 1906 are now utilized for separating the abandoned area from the rest of the pit. New working will proceed in solid coal in the north-easterly part of the holding on lines similar to those formerly adopted. Traversed old workings; no gases. Second outlet shaft and ladderway in good order for travelling. Rules posted; report-books and plan kept to date.

Cambrian Coal-pit, Cambrian (Crown lease; Catherine Dungey, lessee; Alfred Dungey, permit, manager).—(20/4/10): No output during the current year, owing, the lessee says, to want of orders. Negotiations are in progress for sale of this pit to the adjoining lessee, Mrs. McGuckin.

Welshman's Gully Coal-pit, Cambrian (Crown lease; Sarah McGuckin, lessee; J. McGuckin, permit, manager).—(20/4/10): Hydraulic pump in working-order, also hydraulic winch, and tram-rails laid in to working-face. Stripping heavy, 20 ft. and upwards, and the lessee complains that the cost of production, together with lack of trade, makes the pit unremunerative. The lessee and other coal-pit owners in Central Otago find that the introduction of down-country coal and sea-borne coal by medium of the Otago Central Railway has seriously affected their businesses.

Three-mile or Woolshed Creek Coal-pit, Lauder Station (Crown lease; Robert Jones, lessee and manager).—(20/4/10): Pit worked opencast, and, as seam dipping sharply into the hillside, stripping rapidly increasing in depth down to 20 ft. This coal is rather above the average quality for the district, and the lessee has been tempted to work with or under the vertical face. I warned him that he was liable to meet with serious accident by continuing the work in such a dangerous manner, and a notice is being posted that the pit will be closed until restored to safe working-order. Shortage of water for stripping is set out as the cause of bad state of walls of the pit.

St. Bathan's Coal-pit, St. Bathan's (Crown lease; James Enright, lessee and manager).—(19/4/10): Opencast pit, walls in disorder. Season's output has been obtained by lifting bottoms. Water-drainage into this pit continues to be troublesome, but efficient steps to cope with same are not undertaken by the lessee.

Rough Ridge Coal-pit, Idaburn (Crown lease; Mrs. M. Beck, lessee; W. Beck, permit, manager).—(12/4/10): Opencast pit, in good order. Stripping kept well in advance of working-face, whereby the pit is worked more safely and a larger output rendered possible within a given time. At my instance, the powder-magazine is to be shifted further back from the cartway for greater safety. Rules posted, and report-book kept.

Idaburn Coal-pit, Idaburn (Crown lease; John White, lessee, permit, and manager).—Opencast pit. The southerly side of the pit being worked out, operations are now transferred toward the northern boundary. Here the seam is mostly below the country water-level, and a pump is required for unwatering purposes. Stripping kept well in advance, and pit safely worked. Rules posted; report-book kept.

Oturehua Coal-pit, Oturehua (Crown lease; Richard Thomas, lessee, permit, manager).—(13/12/10): Opencast. Working in the bed of the Idaburn Stream, which is turned. Nevertheless a heavy percolation of water occurs through the gravels overlying the seam, and the lower part is worked with difficulty, much being left behind.

Donaldson's Coal-pit, Mount Highlay (Crown lease; W. and G. Donaldson, lessees).

Clyde Colliery, Clyde (Crown lease; Jonathan Rhodes, lessee; G. F. Turner, mine-manager).—(13/4/10): Stoppings on line of "gob" where pillars drawn are in good order, and there is no leakage. Coal being obtained from lower levels of dip. Ventilation good, and places being worked safely.

Cromwell and Bannockburn Collieries Company, Bannockburn (Crown lease; T. K. Harty, managing director, Dunedin; J. Hodson, mine-manager).—(11/11/10): The Shepherd's Creek Mine, in Thom's Gully, having become exhausted, plant is withdrawn and mine abandoned. The new drive at Parcell's Gully to southward is being developed to dip. Places are taken narrow with a view to future pillar-exhaustion, which method has proved more profitable than the former system of wide bords to begin with. Ventilation good, and rules complied with.

The Excelsior Mine remains idle for lack of orders.

Cairnmuir Colliery, Bannockburn (Crown lease; Cairnmuir Coal Company, lessees; A. F. Whittlestone, mine-manager).—(11/11/10): Exhaustion of pillars to dip brought on a partial "creep" or subsidence of overlying strata. The places are seen closed firm with a good break on and no apparent harm done, the area having been fairly well robbed. Gravel filling sluiced in from surface contributed to this satisfactory result. Report-bocks and plan kept; rules posted and reasonably observed. Owing to the proximity of Bannockburn Creek overhead, care is taken to work only pillars away from its influence. In any case damage could result only to the mine; the men would be safe, there being separate outlets on each side of the workings, in addition to the intake or haulage-road.

Ranfurly Coal-mine, Bannockburn (Crown lease; John Hodson, lessee and manager).—(26/3/10): A prospecting-drive has struck the old workings, whence a strong black damp is emanating. I warned Mr. Hodson that he should be careful, otherwise he and his two boys were liable to lose their lives. This part of the seam had been worked and riddled in the early days, of which there is ample evidence on the surface. Hodson, it appears, is hopeful that there is an unworked part of the seam to the dip. I told him that I considered he was in a precarious position working on top of old workings of which no plans are available.

Cardrona Coal-pit, Cardrona (Crown lease; R. McDougall, lessee and permit-holder).—(24/3/10): Opencast pit. The lower part of the pit to northward has been cleared, with the result that the workings are in good order for sluicing top stuff away, and the tramway was being lifted and water laid on for that purpose. The lower part of the block has been worked to bottom, and available coal extracted. Good batter kept on sides of pit, and no high or overhanging faces, as used to be the case on frequent occasions. This mountain-pit (altitude 3,500 ft. above sea-level) is closed during winter months, being then inaccessible owing to frost and snow. A minimum quantity of explosives now in use. Rules posted; report-books kept.

Gibbston Coal-mine, Gibbston Saddle (Crown lease; J. Duncan, lessee and mine-manager).—(23/3/10): Drive now 22 chains to level-face in coal of fairly good quality. Having crossed the fault the manager is hoping to get through the saddle to Doolan's Creek outfall, when it is intended to bring water in and strip the overburden off the coal-seam, utilizing the main level for haulage. By this means (if successful in carrying out his plans) the manager estimates that there will be sufficient coal to the rise to last thirty years at present rate of output. Air dull in level-face, owing to a stenton not being through, but which was almost pricked, as we could talk through it; two shifts of work should remedy this defect. Altitude of mine, 3,350 ft. above sea-level.

SOUTHLAND.

Pukerau Coal-mine, Pukerau (Crown lease, coal reserve; Hamilton, Sheddan, and Gill, lessees; J. Hamilton, permit, manager).—(8/12/10): Driving to dip in piece of solid coal left at first working on account of water having to be pumped. Owing to there being so many openings, ventilation adequate. Powder safely handled.

Nelson's Coal-mine, Pukerau (Crown land; J. H. Nelson, lessee, permit, manager).—(8/12/10): Main level driven to outcrop on southern boundary, and now driving to dip, where water-drainage rather heavy for the size of the pit.

Heffernan's Coal-mine, East Gore (G. B. Paterson and Co., owners; J. Hoffman, permit, manager).—(5/8/10): Timber required on dip road has been put in since last visit. Driving to dip progressing slowly, and too much lignite being taken out to leave satisfactory pillars for support of roof. However, the land being freehold, these would appear to be matters lying between landlord and tenant. Rules posted, and report-books kept.

Green's Coal-mine, Gore (Thomas Green, owner; Johnson and Smyth, lessees; W. C. Johnson, permit, manager).—(2/12/10): Under the influence of the small fan recently erected, the satisfactory ventilation of this pit presents no difficulties. Seam strong and roof safe, a minimum of timber being required for support and safety of workmen. Rules posted, and report-book kept.

Smyth's Coal-mine, Gore (W. H. Paterson, owner; Broome Bros. and Brown, late lessees).—(2/12/10): As the lignite is practically exhausted, plant has been drawn and the mine abandoned.

Bushy Park Coal-mine, Croydon (J. R. Tait and Co., owners; W. Dixon, permit, manager).—(28/1/10): Underground working abandoned, and the seam is being worked opencast; 1,733 tons produced during the year.

Burnwell Coal-mine, East Chatton (Cameron and Johnston, lessees; D. Cameron, permit, manager).—(9/12/10): Driving to dip and opening bords off same in the usual way. Seam strong, therefore workings are safely taken wide and high without timber. By accidental communication between the workings in this and the adjoining mine (Ramsay's) a full and free current of air is travelling and ventilating both mines as never before. Powder-magazine approved.

Chatton Coal-mine, East Chatton (Crown land; Ramsay Bros., lessees; G. Ramsay, permit, manager).—(9/12/10): Conditions prevailing in this mine much resemble those in Burnwell Mine. Owing to the strength of the seam, wide and high workings are safely driven without timber. The cover to surface is not deep.

Pacey's Freehold Coal-mine, East Chatton (Crown land; T. H. Maslin, lessee; J. Buchols, permit, manager).—(9/12/10): Open joints occur in the seam filled with clay, and form "muck-backs" as they are called. These "run" and have to be plugged, iron rail bars being used for bearers in the coal-roof. Workings in good order; ventilation adequate.

Springfield Coal-mine, Waikaka Valley (Crown land; R. Mee Chang, lessee and permit-holder).—(10/12/10): Chiefly opencast, but an attempt is being made to drive underground where stripping too heavy. At one place in the opencast the face was undermined, and I cautioned Chang, and warned him as to the danger of that method of working, which he promised to discontinue. Powder apparently safely handled.

Willowbank Coal-mine, Waikaka Valley (William Jones, lessee and permit-holder).—(10/12/10): Mine in good working-condition, and ventilation fair. The "fault" met with in western level, being an upthrow, is less detrimental than might have been expected, but I pointed out necessity for pillars being left larger to compensate for the troubled nature of the coal-seam at this point. Rules posted; report-book kept. Powder-magazine on surface approved. A new air-shaft is proposed in the near future.

Glenlee Coal-mine, Wendon (Crown land; D. T. McGill, lessee and permit-holder).—(9/12/10): Opencast working only, the underground workings not being at present continued.

Edge's Coal-mine, Wendon (School Commissioners' lease; A. A. Edge, lessee; McIvor and Mitchell, sub-lessees; W. McIvor, permit, manager).—(9/12/10): The old level area easterly having been fairly well exhausted of coal, the dip has been extended, and a new level is broken away westerly. Stentons and brattice required for adequate ventilation, and these the lessees of the pit promised to provide.

Landslip and Riverbank Coal-mines, Waikaia (School Commissioners' lease; William Kyle, lessee and permit-holder).—(7/12/10): These mines are closed down and abandoned. A third mine is opened, where some prospecting to southward resulted in the vertical seam being driven on for a short distance, but unfortunately the energy and perseverance of the lessee is very unlikely to be rewarded.

Rossvale Coal-mine, Landslip, Waikaia (School Commissioners' lease; Bond Bros., lessees; J. Bond, permit, manager).—(7/12/10): Dip drive discontinued after water lodgment formed. A pair of levels turned away, and stentons for ventilation being driven at regular distances. Ventilation good, and mine safely worked.

Waikaia Coal-mine, Landslip, Waikaia (School Commissioners' lease; Alexander Cain, lessee, permit).—(7/12/10): Some heating from soft coal in level at left-hand side of dip had been going on, necessitating blocking off with clay and sand stoppings faced with timber, notwithstanding which leakage of black damp was continuing. This part of the mine consisted of inferior, soft, and crushed coal, liable to spontaneous ignition. In other parts ventilation fair and working-places in order. The second outlet being the upcast air-shaft, however, did not appear to be in stable ground, as there were several falls in the vicinity.

Muddy Terrace Coal and Shale Pit, Waikaia (Crown land; Knuckey and Junker, lessees; F. A. Junker, permit, manager).—(7/12/10): Trade quiet. The small output is being obtained from the shale-seam pillars which are being drawn safely homeward. An Invercargill syndicate is said to be interesting itself in the acquirement of this and an adjoining private property.

Argyle Coal-pit, Glenary, Waikaia (C. Hutton, permit).—(26/1/10): Seam 20 ft., being worked opencast in benches. Stripping kept sluiced away well in advance of working-face, and pit in a safe working-condition.

Mataura Colliery, Mataura (Mataura Collieries (Limited), Gore, owners; A. E. Kemp, secretary; W. Dixon, mine-manager).—(1/12/10): The dip drive is suspended, and levels are being driven to distance from each side of dip to provide new ventilation, which is needed, as the powder-smoke this day seemed to hang in the working-places, atmospheric conditions being unfavourable to natural ventilation. This I pointed out to the manager, who proposes having headings set away from level-faces to surface, by means of which, and having the main dip for intake, the ventilation of working-faces should be relieved. Plant and appliances in good working-order.

Mataura Lignite-pits, Mataura (Beattie, Coster and Co. (Limited), owners; W. Coster, permit, manager).—(2/12/10): Opencast working. Stripping kept well in advance of the working-face, which is of considerable extent. Operations here are carried out in a workmanlike manner, and no accidents occur.

Boghead Coal-pit, Mataura (C. P. Sleeman and Co., lessees; C. P. Sleeman, jun., permit, manager).—(2/12/10): Opencast. Stripping kept well ahead of working-face; thus an element of danger is removed and work conducted safely.

Clarke's Coal-pit, Wyndham (Samuel Clarke, owner; G. W. Clarke, permit, manager).—(24/11/10): Opencast working; seam 12 ft. in thickness; stripping, 6 ft. to 8 ft., kept well in advance of working-face. Work apparently safely conducted.

Graham's Coal-pit, Fairfax (P. S. Graham, owner).—(21/11/10): Coming home on main level pillars. Timber used, and the place is worked in a safe manner. Apparently not a great deal doing.

Ardlowie Coal-pit, Fairfax (Edward Poole, owner).—(21/11/10): Opencast pit. Stripping ahead attended to, and pit in good working-order.

Nightcaps Colliery, Nightcaps (Nightcaps Coal Company (Limited), owners; William Handyside, managing director, Invercargill; W. Barclay, mine-manager).—(16/12/10): No. 1 district: New No. 3 dip workings are being developed in coal of good quality, and roof is stronger and better than had been usual in other parts of the mine. Further in work consists, as heretofore, of coming back on pillars and head coal. The old middle lay-by area is closed, and stopped off permanently. Owing to powder-smoke "hanging" in several working-places, I had to insist on air-brattice being carried nearer to the working-faces than had been done latterly, there being an abundance of air, if properly conducted and the fan working well within its power. No. 2 district: Ventilation good; brattice erected, and air skilfully conducted around the working-faces. Pillar and head coal-working carefully carried out. The lower seam (No. 3) was 4 ft. at outcrop, but has thickened to 10 ft. toward the dip where now being worked. The old "fire" area in this section has cooled down, and undue warmth is now almost imperceptible. An abundance of timber for mine-use is kept on hand, and used unsparingly underground. The roadways, airways, plant, and machinery in good working-order and condition. Magazines for storage of explosives approved, and other requirements of the Act generally well observed. Erection of a compressed-air plant (Ingersoll type) for pumping and dip haulage is under way at the mine-mouth. The opencast workings continue to be worked systematically, and stripping kept well in advance of the working-face. The live electric wires for fan-drive are carried on poles out of reach from the ground, and danger notices are posted. There were no serious accidents during the year.

Wairaki Coal-mine, Nightcaps (L. M. Dillon, lessee and permit-holder).—(22/11/10): Extracting pillars left at first working. Pumping by oil-engine underground, but no nuisance apparently created thereby, there being several openings to surface in this shallow pit.

H.B. Coal-mine, Nightcaps (R. McDowell and Co., lessees; R. McDowell, permit, manager).—(22/11/10): Extracting final stumps of pillars in ground previously worked. Powder-magazine approved for storage of six cases of 25 lb. each of compressed powder, 150 lb. in all.

New Brighton Coal-mine, Nightcaps (Crown lease; Reed, McKenzie, and Co., lessees; W. Kenzie, permit, manager).—(25/1/10): Eight men. Seam 20 ft., worked partly opencast and partly underground; workings kept in a safe and workmanlike manner. Powder-magazine approved for storage of six cases (each 25 lb.) of blasting-powder. Report-book kept; rules posted.

Willow Coal-mine, Nightcaps (J. O. Clapp, owner; R. McGregor, permit, manager).—(23/11/10): Opencast pit lately acquired by the new owner. Water drained by siphon, and opening out afresh. Active work will be started early in the following month.

Beaumont Coal-mine, Nightcaps (Crown lease; Moss Bros., lessees; W. Moss, permit, manager).—(23/11/10): Opencast seam worked to 15 ft. in depth only, stripping being removed in advance of working-face; average, 6 ft. in depth. Steam-pump used for drainage.

Wairio Coal-mine, Wairio, Nightcaps (Wairio Coal Company, owners).—(25/1/10): No work at this pit for some time. The proposed private branch line of railway from Wairio Railway-station to Morley Coalfield still shows no sign of fructification.

Mount Linton Coal-pit, Nightcaps (William Smith, lessee).—(23/11/10): Coal lease obtained from the freeholder. Portable hauling-engine and pump installed for working the seam, which is seen outcropping in the Morley Stream near at hand.

Mount Beaumont Station, Nightcaps.—An outcrop of coal is seen on the terrace near Morley Stream. Nothing yet done to prove the seam, which is easily capable of being prospected.

Bush Siding Coal-pit, Seaward Bush (Crown lease; F. W. Raymond, lessee; F. R. Bowden, permit, manager).—(19/11/10): Opencast pit not being worked at present, chiefly owing to dullness of trade. Seam 30 ft.; gravel stripping, 8 ft. to 10 ft., is kept fairly well back from coal-face.

Hogan's Lignite-pit, Orepuki (Crown land; Cornelius Hogan, licensee).—(22/1/10): Pit idle, and no work has been done here for some time.

Orepuki Shale-works, Orepuki.—(21/10/10): The colliery at the shale-works continues to be closed, and water is up. Boring with the Government diamond drill is suspended pending the arrival of Mr. Johnston, an expert from England, who is to visit and report on the works.

REMARKS.

Ventilation.

Improvement in ventilation continues to be manifested, several fans of the Hayes type having been erected at as many collieries.

In other respects, while the mines have been growing, airways are consequently longer, and still ventilation is maintained.

Accidents.

Two fatalities occurred, each at small mines in Canterbury, and entirely due to remissness on the part of the sufferers. In one case the owner entered the mine single-handed in the early morning, although warned the previous evening not to do so, and was suffocated with black damp coming from an incipient spontaneous underground fire. In the other case the victim, a certificated winding-engine driver, had apparently omitted to use the crossbar at the mouth of the shaft, and had absent-mindedly turned an empty box into the shaft, 70 ft. deep, the cage being at the bottom at the time.

No non-fatal accidents of a serious nature were reported to me as having occurred underground in mines during 1910.

Coal-miners' Relief Fund.

The contributions by coal-owners to the Coal-miners' Relief Fund amounted to £477 19s. 6d., while payments from the fund, aggregating £415 15s. 8d., have been recommended on account of accidents which have occurred in and about coal-mines in the district during the year.

I have, &c.,
E. R. GREEN,
Inspector of Mines.

ANNEXURE B.

QUESTIONS ASKED AT THE 1910 MINE-MANAGERS' EXAMINATION FOR FIRST-CLASS CERTIFICATES OF COMPETENCY.

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

1. If called upon to lay out a colliery on a coalfield where, in consequence of alluvial covering, the measures cannot be examined,—
   (*a.*) How would you proceed to find the position of the coal-beds and line of greatest dip ?
   (*b.*) State the considerations which would guide you in deciding on the position of the shafts and general lay-out of an extensive colliery.

2. In sinking a shaft 400 yards deep which has to pass through several seams of coal, state how you would ventilate it, give size of fan and pipes, state how secured in the shaft, and whether you would use exhausting or blowing fan.

3. Having to sink and equip a shaft from which it is intended to raise 1,000 tons per eight-hours shift, allowing time for raising and lowering men, depth of shaft to be 1,200 ft.,—
   (*a.*) State the general requirements for sinking, and precautions requisite for the safety of the sinkers.
   (*b.*) Show by sketches and description how you would fit up the shaft for cages, and what safety appliances you would adopt in connection with the winding-plant.
   (*c.*) Give size of winding-engine and strength of ropes required for the work.

4. If required to open a colliery by incline tunnel 500 yards long driven on a grade of 1 in 4 through the overlying coal-measures, state—
   (*a.*) Size of tunnel you would adopt, the minimum output to be 600 tons per shift of eight hours.
   (*b.*) How you would ventilate the tunnel during its progress, and the special precautions you would adopt to secure the safety of the men working in the face.
   (*c.*) What considerations would influence you in adopting machinery or only hand-labour in driving the tunnel, and what class of pump you would apply to deal with feeders of water, 150 gallons per minute.
   (*d.*) What systems of haulage you would install to deal with the output and safety appliances, if any, which you would use in connection with the haulage.

SUBJECT 2.—*Working Coal and Timbering Underground.*

1. State your own actual experience of working coal under the—
   (*a.*) Longwall system or any modification thereof ; and
   (*b.*) Bord-and-pillar system.

Give sketches showing each system, and methods of timbering requisite, and define the relative positions of coal-face props, packs, chocks, and lines of rails.

2. In a longwall seam where the roof is much stronger than the floor, what effects are the roadways likely to show ? Give a sketch showing how you would secure a main road through a heavy fall where top weight is great.

3. What are the dangers to be avoided in pillar-extraction, and how should a colliery be laid out so as to avoid as far as possible accidents in connection with such work ?

4. The reports of mining inspectors in all mining countries show that the greatest percentage of accidents is due to falls of roof and sides in working coal : what in your opinion is the cause of this, and what steps should be taken to avoid such accidents ?

SUBJECT 3.—*Mine-gases, Spontaneous Combustion, and Ventilation.*

1. When firedamp at its most explosive point is fired what takes place ? What are the resultant gases, in what proportions, and what are their properties ?

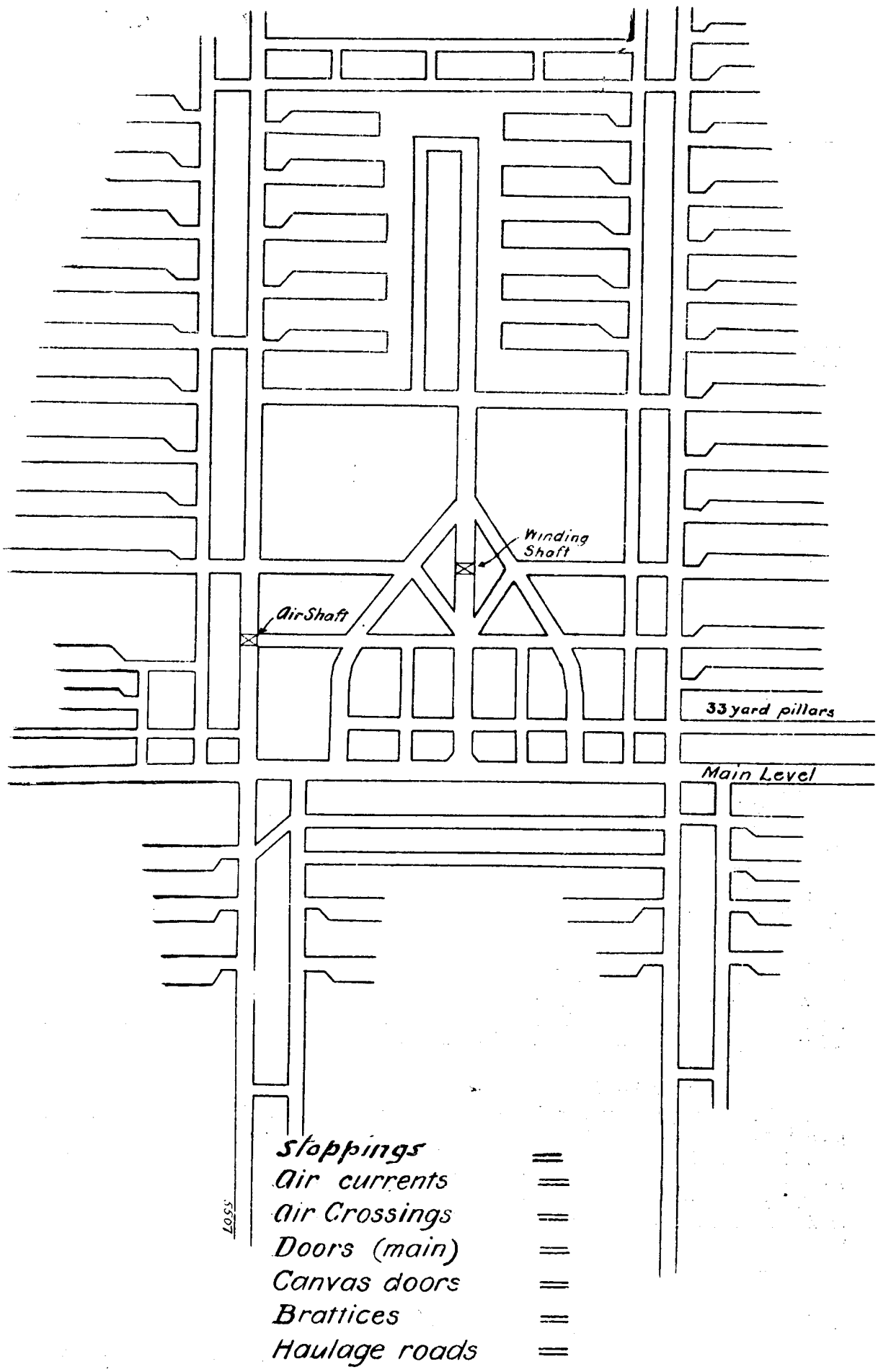
2. Name the chief constituents of pure air, and give chemical properties ; also give the chemical properties of firedamp and black damp, and their weights as compared with the atmosphere.

3. State what you understand is meant by the term "spontaneous combustion," and what you consider the best means of dealing with outbreaks of fire underground, giving your own experience, if any.

4. If a water-gauge of 1·8 in. produces 110,000 cubic feet of air per minute, what quantity will a water-gauge of 2·5 in. produce, and what additional horse-power will be required ?

5. What rules should be followed in splitting the air-currents in mines, and what practical limits are imposed by considerations of efficiency and economy ?

6. Ventilate the plan herewith, and show ventilation-currents, stoppings, air-crossings, canvas doors, main doors, and regulators.


Winding Shaft
Air Shaft
33 yard pillars
Main Level
Stoppings
Air currents
Air Crossings
Doors (main)
Canvas doors
Brattices
Haulage roads
Loss

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

1. In working towards the rise in the direction of the old workings of an adjoining colliery containing a large volume of water, what check surveys or measurements would you take if doubtful as to accuracy of information obtained from old working-plans, and what other practical precautions would you insist upon ?

2. If required to carry a main-haulage road through old workings much fallen, what special precautions would you adopt to insure the safety of men employed on the work ? Show by sketches the system of timbering you would apply to fallen ground.

3. Under what conditions would you consider it necessary to withdraw miners from their working-places ?

4. What special precautions would you take in reopening an old mine ?

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

1. Say what type of boiler you consider best for colliery-work, and say where a boiler is most likely to give way from corrosion or other causes. How often should a boiler be cleaned and thoroughly examined ?

2. If the safety-valve of a boiler is $4\frac{1}{2}$ in. diameter, the lever 35 in. long to the centre of the weight and $4\frac{1}{2}$ in. from the fulcrum to the centre of the valve, the weight being 78 lb., what is the pressure per square inch ? Show calculation.

3. What is the object of applying a condenser to a steam-engine ? What are the advantages, and what amount of vacuum would you usually expect to obtain ?

SUBJECT 6.—*Mine Drainage and Haulage, and Appliances for Same.*

1. What are the relative advantages and disadvantages of pumping-engines fixed above and below ground ? What plan would you adopt if required to raise 200 gallons of water per minute from each of two mines 100 yards and 200 yards deep respectively ?

2. Describe the class of pump you would use for dealing with a large quantity of water in a sinking shaft, and show by sketches how you would fix them—the water being met with at a depth of 100 yards, and feeders likely to continue to a further depth of 100 yards.

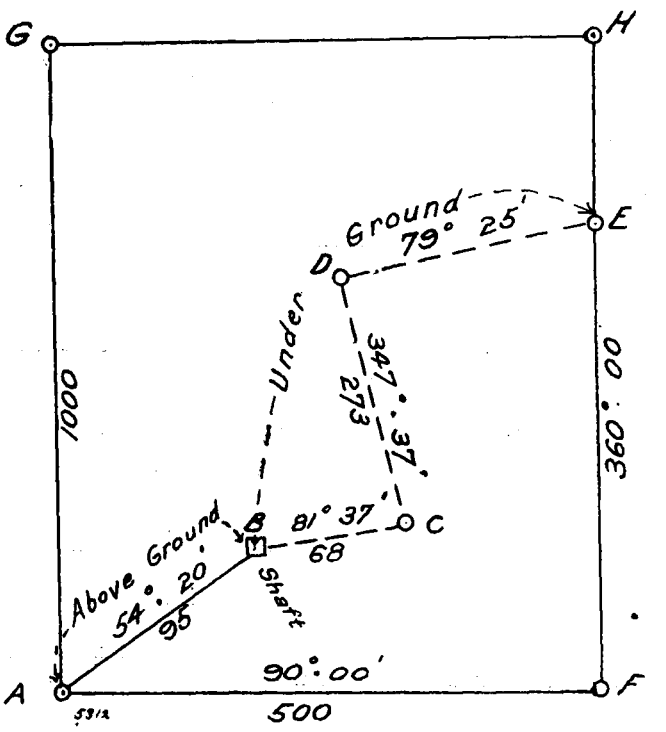
3. Given an endless-rope haulage up a dip and operated by a friction-clutch, show by sketches the precautions you would adopt against accident from breakage of rope, breakage of clips, or from the friction-clutch being thrown out of gear.

4. A pair of winding-engines having cylinders 30 in. diameter and 5 ft. stroke and working under a steam-pressure of 60 lb. per square inch, what is the greatest diameter the drum can be made in order that the engines may raise a load of 5 tons, allowing a margin of one-third for overcoming friction ?

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

1. Describe as concisely as possible any coalfield in New Zealand with which you are acquainted. The following points should be given mention :—
   (*a.*) Nature and age of rocks forming the coal-bearing series or formation.
   (*b.*) Strike, dip, and general structure of coal-bearing rocks.
   (*c.*) Number of workable seams, their thickness, extent, and quality.
   (*d.*) Faults, rolls, washouts, &c.

2. In what way or ways do you consider coal to have been formed ?



All figures on above sketch are in links.

3. The diagram on the preceding page represents a coal-mining lease in which the position of the centre point at bottom of shaft B is given, also two other points, C and D, in the underground workings. Compute the distance required to be driven on the bearing 79° 25′ from D to intersection with eastern boundary at E. Find also the distance E–F.

There is a fall from the bottom of shaft B to station C, the angle of inclination being 7° 33′: what is the difference in height between these points, in feet?

4. The area of a rectangular coal lease is 125 acres and its width 35 chains 25 links: find its length.

5. Describe the mining dial in its simplest form, and how underground observations are made with it.

6. Describe the magnetic needle, its composition, and the best form in which the needle should be made. Give your reasons for preferring one form to another.

How and on what are these needles suspended or balanced? Name one or more stones specially suited for lining the little brass cap above the pivot or centre-pin.

7. Describe how the corners of a coal-mining lease are marked on the surface of the ground, and name what in your opinion are the three most durable woods for survey-pegs.

SUBJECT 8.—*Practical Elementary Electricity.*

1. Name the laws governing the flow of electric currents.

2. A machine gives an electric pressure of 60 volts: what current will it send through a resistance of 5 ohms?

3. A machine has a pressure of 60 volts: what current will be developed by 80-horse power?

4. Under what conditions would you consider electric power the most suitable for application to work underground in a mine?

5. In electric shot-firing, what are the points to be carefully attended to by the fireman in order to prevent accidents?

6. What are the precautions to be carefully observed by those employed in connection with electric-power plants in order that accidents may be avoided?

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

1. If the total pressure upon a separation-door is 400 lb. when the water-gauge is 2½ in., what is the area of the opening, and what is the height of the door when its width is 5 ft. 6 in.?

2. What is the diameter of a pump which will deliver as much water in twelve hours as a 10-in.-diameter pump will deliver in eighteen hours, both working the same speed?

3. A drift or tunnel is 100 yards long, 10 ft. wide at bottom and 9 ft. at top, and 7 ft. 6 in. high: what would be the cost per cubic yard of the tunnel if the price was £4 per lineal yard? How many tubs of 22 cubic feet capacity would be filled out of the tunnel if the proportion of solid to broken be as 55 to 114?

4. If you have an output of 600 tons daily, each tub weighing 5 cwt., and carrying 11 cwt. of coal, what is the total number of tubs and weight raised per shift, exclusive of other weights?

5. What is the diameter in yards of a circle containing 2·25 acres.

First Aid to the Injured.

1. Are you the holder of an ambulance certificate? State your practical experience in connection with first-aid work.

2. When a person is found in a state of insensibility, what treatment should be applied?

3. State general rules to be observed in dealing with simple fractures.

4. State the treatment to be practised in cases of burns and scalding, and say what is most to be feared from such injuries.

5. Do you consider ability to render first aid to be an essential qualification for the underground officers in coal-mines?

QUESTIONS ASKED AT THE 1910 EXAMINATION FOR SECOND-CLASS CERTIFICATES OF COMPETENCY.

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

1. State briefly the experience you have had in prospecting for coal, and the general methods of carrying on such work.

2. If required to bore for coal to a depth of several hundred feet, what plant would you prefer to use? What are the points to be carefully observed in order to secure reliable information from boring?

3. Give a sketch with figured dimensions of a scaffold suitable to carrying men and material required in the work of walling a shaft 14 ft. clear.

4. Show by sketches what you consider a good arrangement for the bottom of a winding-shaft from which 100 tons of coal per hour has to be raised.

SUBJECT 2.—*Working Coal and Timbering Underground Workings.*

1. What are the special dangers in working steep seams over those of flat seams? Describe the precautions you would adopt to guard against these special dangers.

2. How would you work a mine containing a seam 5 ft. thick with a strong roof and little packing material; dip about 1 in 4? Show by sketch the method of timbering the working-places.

3. Name the principal causes of accidents in mines. Give shortly the precautions necessary to avoid them.

4. How would you regulate the use and supply of timber in the workings of a colliery?

5. How would you proceed to draw the timber in abandoned workings, and what precautions would you take in connection with such work?

SUBJECT 3.—*Mine-gases, Spontaneous Combustion, and Ventilation.*

1. How would you detect the presence of firedamp, and how estimate the proportion present? Describe how you would proceed to search for firedamp in the working-faces and roads leading thereto.

2. What are the conditions which would influence you in deciding to increase the quantity of air above what the Coal-mines Act requires to circulate through the workings of a colliery?

3. What proportion of firedamp and air constitute the most explosive mixture, and at what proportion does the mixture cease to be explosive?

4. Have you had experience in dealing with underground fires? If so, give conditions, and say what you understand by the term "spontaneous combustion."

5. Ventilate the plan shown on annexed sheet, using the conventional reference signs to indicate your method.

6. Sketch a regulator, and state in what part of the workings you would fix it that it might be most effective, and state why. Sketch also an air-crossing, giving dimension for passing 30,000 cubic feet per minute over a main-haulage road.

7. State the general laws relating to friction of air in mines.

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

1. What are the indications generally observed in the working-faces when approaching old workings, and what are the most essential precautions to be taken when working towards such?

2. State what you know of the present methods of firing shots, and which system you consider the best and safest; and say whether you would fire more than one shot at a time.

3. What do you understand by the term "blown-out shot"? What are the dangers to be feared from such, and what are the necessary precautions to prevent them?

4. Give your experience in working with safety-lamps, and say what type of lamp you consider best for detecting small percentages of firedamp.

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

1. When a pump loses its water, what do you look for, and how do you remedy the defect? What is the maximum height that a pump can be fixed above the water to be pumped?

2. If you have a ram pump 12 in. diameter at the bottom of a shaft 200 ft. deep forcing water to the surface, what is the total pressure in pounds on the ram?

3. State what systems of haulage are in general use, and under what circumstances each is specially applicable. Describe the details of the system you are best acquainted with.

4. What are the appliances which should in all cases be provided for the prevention of serious accidents from overwinding?

5. If you have a roadway rising 1 in 13 from the winding-shaft, and over which it is required to convey 500 tons of coal per shift, describe the haulage system you would adopt.

SUBJECT 6.—*Practical Elementary Electricity.*

1. Name the laws governing the flow of electric currents.

2. A machine gives an electric pressure of 60 volts: what current will it send through a resistance of 5 ohms?

3. A machine has a pressure of 60 volts: what current will be developed by 80-horse power?

4. Under what conditions would you consider electric power the most suitable for application to work underground in a mine?

5. In electric shot-firing, what are the points to be carefully attended to by the fireman in order to prevent accidents?

6. What are the precautions to be carefully observed by those employed in connection with electric-power plants in order that accidents may be avoided?

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

1. In driving a heading 6 ft. high by 10 ft. wide and 150 yards long, the men are to be paid 4s. 6d. per cubic yard: what amount will be required to pay them?

2. If you had a feeder of 100 gallons of water per minute coming to your pumps, and you required 36 hours' standing lodge room, show by calculation the size of lodge room required.

3. If a water-gauge applied on separation-door gives a reading of 2·25 in., what would be the pressure per foot, and also total pressure against the door, the opening being 5 ft. 6 in. by 4 ft. 9 in.?

4. An air-current of 20,000 cubic feet per minute is passing through a roadway 8 ft. wide by 6½ ft. high: what is the velocity of the current per minute?

First Aid.

1. What is meant by the term "first aid to the injured," and what is the principal aim and object of the teaching of this subject?
2. How would you proceed to render first aid to a person suffering from broken ribs?
3. Describe the treatment for fracture of the collar-bone.
4. Describe fully the treatment of persons suffering from suffocation by smoke or gases.
5. State how you would proceed to render first aid to a person suffering from severe burning, and the kind of application you would use.
6. Give full description of the kinds of first-aid materials you consider should be always on hand at coal-mines.

List of Persons who have obtained Certificates under the Coal-mines Acts.

First-class Mine-managers' Certificates.

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

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

Issued under the Coal-mines Acts, 1886, 1891, 1905, and 1908, after Examination.

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

Issued under the Coal-mines Act, 1886, on Production of English Certificate.

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

Issued to Inspectors of Mines by virtue of Office, under the Coal-mines Acts of 1886 and 1891.

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

* Deceased since issue of certificates.

Issued under the Coal-mines Acts of 1891, 1905, and 1908, on Production of Certificate from a recognised Authority outside the Dominion.

First Class.

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

SECOND-CLASS MINE-MANAGERS' CERTIFICATES.

Issued under the Coal-mines Act, 1891.

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

Issued under the Coal-mines Acts, 1886, 1891, 1905, and 1908, after Examination.

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

Issued under the Coal-mines Acts of 1891, 1905, and 1908, on Production of Certificate from a recognized Authority outside the Dominion.

Brownlie, T., Huntly.
Burt, A., Huntly.
Burt, W. Huntly.
Dickinson, W., Gore.
Dodd, W., Granity.
Dowgray, R., Granity.
Eyeington, G., Huntly.
Greenwell, R., Huntly.
Grenall, S., Granity.
Inglis, A., Huntly.
Jones, T., Kimihia.
Lennox, W., Springfield.
Little, W., Wellington.
Littlewood, G. G., Denniston.
Longstaff, H. C., Kaitangata.
McCall, John, Wellington.
McGeachie, J., jun., Mokau.
McGuire, P., Mount Somers.
McGuire, William, Seddonville.
Parsonage, W., Dunollie.
Penman, A., Huntly.
Robertson, J., Granity.
Sneddon, J., Blackball.
Strachan, J., Dunedin.
Tennant, D., Paparoa.
Talbot, H., Huntly.

UNDERVIEWERS' CERTIFICATES.

Issued under the Coal-mines Amendment Act, 1909.

Allan, James, Puponga.
Attrill, Charles Waterford, Mercer.
Bond, John, Waikaia.
Boustrage, T. Hubert, Brunnerton.
Broome, James, Gore.
Clough, Henry, Millerton.
Davidson, William, Mine Creek.
Davis, William, Runanga.
Donaldson, James, Kaitangata.
Falconer, Andrew, Abbotsford.
Flynn, John, Bannockburn.
Green, Richard, Abbotsford.
Hawthorn, James, Puponga.
Hunter, Peter, Ngakawau.
Johnston, William Crowan, Gore.
Johnstone, Thomas, Denniston.
Levick, Harry, White Cliffs.
Mann, William, Granity.
Marsh, Charles George, Glentunnel.
Muncaster, William, Runanga.
McAlister, Robert, Kaitangata.
McGrane, Reginald, Seddonville.
McKenzie, David, Nightcaps.
McNeill, William, Fairfield.
Newlands, George, Brunnerton.
Nimmo, Thomas, Papakaio.
Nimmo, William, Ngapara.
Penman, John, Denniston.
Proctor, William, Kaitangata.
Robertson, William, Mosgiel.
Todd, Thomas, Nightcaps.
Walker, John, Blackball.
Williams, William, Kaitangata.
Wilson, Daniel, Kaitangata.
Winter, John Denniston.

Issued under the Coal-mines Amendment Act, 1909, after Examination.

Brown, Charles Henry, Denniston.
Hunter, Peter, Stockton.
Peacock, Thomas, Denniston.
Turner, Alfred, Kiripaka.

Issued under the Coal-mines Amendment Act, 1910.

Beardsmore, E., Denniston.
Fisher, T., Westport.
Hadcroft, J., Runanga.
Jones. David, Nightcaps.
Jones, W., Waikaka Valley.
Manderson, P., Runanga.
Mann, D., Granity.
Neill, S., Kawakawa.

* Deceased since issue of certificates.

FIREMEN AND DEPUTIES' CERTIFICATES.

Issued under the Coal-mines Amendment Act, 1909.

Aitken, George, Glentunnel.
Allan, A. George, Abbotsford.
Allan, Charles, Brunnerton.
Beardsmore, Edward, Denniston.
Berry, Albert Henry, Huntly.
Blaney, James, sen., Kaitangata.
Boyd, Robert, Waronui.
Bradley, Robert, Denniston.
Buchols, Joseph, Waikaka.
Burgess, William Charles, E. Gore.
Callaghan, Frederick, Kiripaka.
Campbell, Samuel, Millerton.
Chamley, William, Millerton.
Clausen, Emil P., c/o J. Worthington, 33 Hiropi Street, Newtown, Wellington.
Connelly, Michael, Denniston.
Connew, John, Puponga.
Coppersmith, John, Denniston.
Coulthard, Thomas, Brunnerton.
Cowan, Robert Black, Gibbston.
Cuthbertson, Robert, Fairfield.
Darby, James, Huntly.
Davis, Evan, Denniston.
Deeming, William, Hikurangi.
Dellaway, Archibald, Denniston.
Dickson, Richard, Hikurangi.
Dillon, Lawrence M., Nightcaps.
Duncan, Frank, Huntly.
Duncan, Hugh, Kaitangata.
Evans, John, Granity.
Evans, William, Abbotsford.
Findlay, Charles, Denniston.
Foot, Frederick Ernest, Denniston.
Fullick, George, Runanga.
Gibson, Matthew, Abbotsford.
Gibson, Robert, Millerton.
Gilmour, William, Millerton.
Glover, Richard, Runanga.
Gray, Thomas, Abbotsford.
Gribben, John, Kaitangata.
Headcroft, James, Runanga.
Hamilton, John, Hikurangi.
Hargreaves, Charles, Millerton.
Harris, John, Reefton.
Harris, Joseph T., Saddle Hill.
Hartley, John, Denniston.
Hay, James, Denniston.
Heron, Ralph, Kimihia.
Higgins, Thomas James, Denniston.
Hislop, William, Denniston.
Holden, Samuel, Granity.
Housley, Benjamin, Huntly.
Howe, George Charles, Shag Point.
Jackson, Samuel, Millerton.
Jarvie, William Marshall, Kaitangata.
Jaspers, George F., Denniston.
Jenkins, James, Ngakawau.
Johnston, C. Mountier, Seddonville.
Jones, David, Nightcaps.
Kaye, Charles, Runanga.
Kitto, Richard, Kaitangata.
Leeming, J. T., South Malvern.
Lutton, William, Millerton.
Mann, Duncan, Millerton.
Mason, William, Denniston.
Mears, Andrew David, Runanga.
Monorieff, Thomas, Nightcaps.
Moore, Thomas, Mangatini.
Morganti, Charles, Ngakawau.
Murdoch, Colin McColl, Stirling.
McCaffrey, James, Seddonville.
McCoughern, John, Kaitangata.
McDonald, John T., Millerton.
McGarry, Isaac, Millerton.
McGhee, William, Kaitangata.
McGill, Douglas Thomas, Waikaka.
McGill, John, Huntly.
McKenzie, James, Nightcaps.
Newburn, Robert, jun., Kaitangata.
Newburn, Samuel, Kaitangata.
Nicholas, William, Kaitangata.
Oliver, William, Kaitangata.
Parcell, Henry Clyde, Bannockburn.
Park, Francis, Stirling.
Peckham, Henry William, Huntly.
Penman, Robert, Kaitangata.
Richards, James, Brunnerton.
Rodgers, Edwin, Kaitangata.
Sanderson, John, Kurow.
Scott, Charles, Nevis.
Scott, John, Runanga.
Skellern, John, Huntly.
Smith, Edwin, Springfield.
Smith, William, Huntly.
Smith, William, Seddonville.
Sneddon, James, Blackball.
Southward, John, Runanga.
Statham, Robert, Kaitangata.
Taylor, David, Roa.
Taylor, James, Springfield.
Thin, William, White Cliffs.
Travis, James, Alexandra South.
Tripp, Albert, Kaitangata.
Wallace, John, Mataura.
Wardrope, Francis, Hikurangi.
Watson, Andrew, Roa.
West, George Thomas, Waronui.
White, James, Roa.
Whorsky, John, Huntly.
Wilson, Walter William, Springfield.
Young, Thomas Gardner, Waikaia.

Issued under the Coal-mines Amendment Act, 1909, after Examination.

Allan, James, Brunnerton.
Anderson, Walter, Blackball.
Berry, T., jun., Huntly.
Blair, Peter, Huntly.
Boddy, Archibald John, Runanga.
Broadbent, Samuel, Huntly.
Buchanan, William, Millerton.
Burdon, George, Denniston.
Burt, T., Huntly.
Burt, W., jun., Huntly.
Clark, W. S., Dunollie.
Connolly, John, Runanga.
Connolly, John Joseph, Runanga.
Curran, James, Ngakawau.
Cuthbertson, John, Glentunnel.
Danks, Peter, Millerton.
Darby, W., Huntly.
Davis, Oliver James, Runanga.
Downes, William Norbury, Cobden.
Duggan, Francis, Runanga.
Fox, Henry John, Blackball.
Griffen, James, Kaitangata.
Hall, R. H., Huntly.
Hawkins, Joseph, Burnett's Face.
Hendry, John, Millerton.
Hicks, J. R., Kiripaka.
Hilton, Thomas, Denniston.
Honey, Archibald John, Denniston.
Hopkinson, Joseph, Seddonville.
Innes, Andrew, Runanga.
Johnson, Thomas, Huntly.
King, Thomas Henry, Granity.
Lauder, Matt Currie, Runanga.
McAvoy, William, Ngakawau.
McDonald, Thomas, Burnett's Face.
McKernan, John, Millerton.
McMillan, John, Huntly.
McMillan, John, Kaitangata.
Maddison, W., Huntly.
Makepeace, Henry, Runanga.
Morganti, Louis, Millerton.
Moreland, S., Hikurangi.
Moye, John Patrick, Denniston.
Myers, Richard, Millerton.
Newton, Charles, Runanga.
Nicholson, David, Huntly.
Niven, Peter, Ngakawau.
Nolan, John, Granity.
O'Brien, Denis Quinlan, Millerton.
O'Brien, Martin, Millerton.
Parker, Andrew, Greymouth.
Parr, Joseph, Burnett's Face.
Pearson, Samuel George, Burnett's Face.
Pearson, William, Burnett's Face.
Reed, W. H., Hikurangi.
Ruston, Edwin Walter, Huntly.
Seddon, William, Huntly.
Smith, Thomas W., Millerton.
Southward, William, Runanga.
Strongman, Charles James, Cobden.
Sweeney, John Lewis, Runanga.
Tate, Anthony, Seddonville.
Taylor, Christopher, Millerton.
Thomson, Thomas, Mine Creek.
Vurlow, Frederick Alexander, Denniston.
Wallwork, Moses, Runanga.
Wear, Daniel, Huntly.
Webster, Oliver, Huntly.
Wood, W., Huntly.
Worthington, T., Millerton.

Issued under the Coal-mines Amendment Act, 1910.

Broadfoot, W., Millerton.
Cumming, J. S., Denniston.
Dixon, A., Nightcaps.
Garrey, W., Kaitangata.
Hartshorne, W. C., Brunnerton.
Hodgett, J., Burnett's Face.
King, J., Granity.
Lee, S., Nightcaps.
McIvor, W., Waikaka.
McIntosh, A. S., Shag Point.
Russell, H. C., Bannockburn.
Saunders, W., Denniston.
Stevenson, J., Shag Point.
Thomas, B., Denniston.
Tinker, G., Nightcaps.

ANNEXURE C.

STATISTICS OF WORKINGS IN COAL-MINES, 1910.

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. Size of Shaft or Adit.	Dimensions of Shafts. Depth of Shaft or Length of Adit.	Output delivered by	Output for 1910. Coal.	Output for 1910. Slack.	Output for 1910. Total.	Approximate Total Output to 31st December, 1909.	Approximate Total Output to 31st December, 1910.	Number of Men ordinarily employed. Above	Below.	Total.	Power used for drawing Mineral.	Pumps. Stroke.	Pumps. Size of Barrel.	Pumps. Height of Column.	Means of Ventilation.	Date of Inspector's Last Visit.
NORTHERN INSPECTION DISTRICT.																										
KAWAKAWA DISTRICT.																										
Kawakawa Mine	Neill, S. ..	12	semi-bitum.	1	3′ to 5′	3′ to 5′	1 in 3	bord and pillar	1	5½′ x 3½′	200′	adit	Tons. 400	Tons. ..	Tons. 400	Tons. 73,992	Tons. 74,392	2	3	5	horse	..	..	..	..	17/11/10
KAMO DISTRICT.																										
Whangarei Mine	Taylor, A. H. ..	2	ditto	1	4′	4′	1 in 4	ditto	2	12′ x 6′ 9′ x 6′	106′ 100′	shaft	1,469	..	1,469	175	1,644	9	16	25	steam	6″ 6″	4″ 4½″	100′ 60′	exhaust steam	11/11/10
HIKURANGI DISTRICT.																										
Hikurangi Mine	Dunn, W. R. ..	18	″	1	2′ to 14′	2′ to 12′	1 in 8	″	3	6′ x 6′ dip	800′	rail	62,840	..	62,840	639,952	702,792	15	75	90	steam and horse	..	..	..	natural	14/11/10
Northern Collieries ..	Morgan, W. ..	13	″	1	2′ to 12′	2′ to 12′	varied	″	7	6′ x 8′ adit 9′ x 6′ 6½′ x 6′	1,850′ 462′	adit dip	44,626	..	44,626	323,547	368,173	10	67	77	ditto	free	drai	nage	″	12/11/10
NGUNGURU DISTRICT.																										
Kiripaka Colliery	Tattley, E. W. ..	12	″	1	13′ to 20′	11′ to 18′	1 in 6	″	2	9′ x 6′ 8′ x 6′	900′ 900′	adit	45,462	..	45,462	199,991	245,453	21	38	59	steam	10″	4″ 7″	154′	fan	10/11/10
WAIKATO DISTRICT.																										
Taupiri Extended	Wood, W. ..	23	brown	1	10′ to 30′	20′	1 in 10	″	2	10′ diam.	166′	shaft	91,342	39,011	130,353	1,008,943	1,139,296	39	241	280	″	12″	2x5″	204′	″	8/12/10
Taupiri Reserve	″ ..	24	″	1	10′ to 24′	18′	1 in 8	″	1	7′ diam. 8′ x 6′	209′ 50′	adit	1,080	189	1,269	335,989	337,258	3	9	12	″	12″	7″ 7″	220′	steam-pipes	2/4/10
Ralph's Taupiri	Fletcher, J. ..	21	″	1	10′ to 60′	20′	1 in 10	″	2	9′ x 5½′ 8½′ diam.	190′ 145′	shaft	73,520	23,820	97,340	748,257	845,597	49	198	247	″	12″	2x5″	230′	fan	9/12/10
MIRANDA DISTRICT.																										
Union Collieries	Tattley, T. J. ..	9	″	1	30′ to 50′	20′ to 30′	varied	″	2	6′ x 6′ 4′ x 4′ 9′ diam.	700′ 90′ 130′	adit	12,341	..	12,344	100,749	113,093	8	16	24	″	10″ 10″	6″ 6″	120′ 120′	exhaust steam	9/9/10
DRURY DISTRICT.																										
Drury Colliery	Holden, James ..	6	″	1	14′	7′	1 in 5	″	1	5′ x 6′	700	″	152	4	156	2,533	2,689	1	3	4	manual	..	..	..	natural	4/6/10
MOKAU DISTRICT.																										
Mangapapa Mine	Lennox, W. ..	26	″	1	6′ to 8′	6′ to 8′	1 in 10	″	1	9′ x 6′	1,752′	″	4,405	..	4,405	65,370	69,775	2	13	15	horse	..	..	..	fan	18/10/10
Output of mines included in previous statements at which operations are suspended ..																1,654,870	1,654,870									

STATISTICS OF WORKINGS IN COAL-MINES, 1910—*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 1910.			Approximate Total Output to 31st December, 1909.	Approximate Total Output to 31st December, 1910.	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.		
WEST COAST INSPECTION DISTRICT.																										
NELSON.													Tons.	Tons.	Tons.	Tons.	Tons.									
Enner Glynn	Carroll, James (permit)	1	brown	1	2′ to 5′	all	1 in 2	stoping	1	8′ x 4′	183′	shaft	120	..	120	1,337	1,457	1	3	4	steam	..	..	..	fan	2/7/10
COLLINGWOOD.																										
Puponga	McEwan, R. ..	7	bitum.	1	3′ to 8′	„	1 in 3	bord and pillar	..	9′ x 6′ 6″	27 ch.	adit	23,000	5,600	28,600	85,471	114,071	22	52	74	„	14″ 8″ 12″	6″ 4½″ 7″	179′ 172′ 225′	„	28/11/10
Mataura	Walker, A. (permit)	..	..	..	(Prospecting only)			..	..	..	..	..	..	..	..	..	..	4	..	4	..	..	..	..	..	29/11/10
Taupata Estates	Hawthorn, James (permit)	..	..	..	(Prospecting only)			..	..	..	..	..	..	..	..	..	..	3	4	7	..	..	..	..	..	29/11/10
WESTPORT.																										
Seddonville State Colliery ..	James, I. A. ..	7	bitum.	1	12′	all	variable	bord and pillar	1	6′ x 12′ 7′ x 10′	150′ (shaft) (72 ch. tunnel)	endless rope	23,123	39,591	62,714	277,345	340,059	25	90	115	steam	Free drainage			fan	30/12/10
Westport-Stockton ..	McAvoy, H. ..	2	„	1	5′ to 14′	„	„	ditto	..	*B* 8′ x 7′ *C* 13′ x 8′ *D* 13′ x 7′	65 ch. 26 ch. 13 ch.	endless rope and electric locomotives	91,257	60,694	151,951	92,942	244,893	62	103	165	electricity	Free drainage			„	8/11/10
Millerton	McCormick, W...	19	„	1	4′ to 40′	12′	„	„	..	10′ x 6′ 10′ x 6′ 11′ x 7′ 12′ x 7′ 12′ x 7′	33 ch. 45 ch. 72 ch. 53 ch. 11 ch.	endless rope	223,767	45,049	268,816	2,863,535	3,132,351	110	380	490	gravity	Free drainage			„	24/11/10
Ironbridge, Denniston ..	Thomson, Thomas	19	„	2	3′ to 20′	all	„	„	..	8′ x 6′ 8′ x 6′	138 ch. 19 ch.	ditto	263,004	84,715	347,719	5,374,712	5,722,431	164	483	647	steam	Free drainage			„	2/11/10
Coalbrookdale, Denniston ..	Dixon, Charles W.	30	„	2	3′ to 20′	„	„	„	..	9′ x 6′	125 ch.	„									„	Free drainage			„	3/11/10
BULLER ROAD.																										
White Cliffs	Smeaton, S. (permit	16	„	1	16′ to 18′	10′	1 in 4	„	..	10′ x	250′	adit	320	..	320	6,341	6,661	..	1	1	horse	Free drainage			natural	11/11/10
Rocklands	Murley, John (permit)	14	„	1	27′	8′	1 in 10	„	..	10′ x 8′	5 ch.	„	229	..	229	5,918	6,147	..	1	1	„	Free drainage			„	11/11/10
BOATMAN'S.																										
Archer's Freehold	Archer, F. W. (permit)	16	„	2	10′ each	all	1 in 6	„	..	7′ x 5′	900′	„	530	..	530	13,351	13,881	1	2	3	manual	Free drainage			„	16/11/10
Coghlan's Freehold ..	Coghlan, J. (permit)	14	„	1	12′	8′	1 in 3	„	..	6′ x 4′	520′	„	43	606	649	3,120	3,769	1	1	2	„	Free drainage			„	16/11/10

Reefton.																												
Burke's Creek	Thomson, Andrew	9	"	1	10′	8′	1 in 4	"	..	12′ x 8′	200′	"	1,744	279	2,023	6,777	8,800	1	4	5	horse	Free d	rain	age	"	16/11/10
Lockington's Leasehold, Burke's Creek	Lockington, E. (permit)	9	"	1	10′	6′	1 in 4	"	..	6′ x 5′	400′	"	160	..	160	1,691	1,851	1	1	2	manual	Free d	rain	age	"	16/11/10
Golden Treasure, Murray Creek	Billett, J. (permit)	31	"	1	12′	all	variable	open face	..	..	..	..	87	1,279	1,366	25,676	27,042	2	..	2	..	..	..	..	..	17/11/10
Phœnix and Venus, Murray Creek	Knight, W. (permit)	29	"	2	10′	8′	1 in 2	bord and pillar	..	5′ 6″ x 4′ 6″	300′	adit	1,148	..	1,148	26,147	27,295	2	3	5	manual	Free d	rain	age	natural	17/11/10
Watson and Moyle's Mine, Murray Creek	Watson, W. (permit)	1½	"	1	8′	6′	1 in 10	ditto	..	6′ x 4′	300′	"	306	611	917	458	1,375	..	2	2	"	Free d	rain	age	"	17/11/10
Reefton	Billett, Jas. (permit)	8	"	1	9′	8′	1 in 3	"	..	6′ x 4′	600′	"	20	110	130	3,785	3,915	..	2	2	"	Free d	rain	age	"	19/11/10
Golden Point	Kearns, R. L. (permit)	2	"	1	5′	all	1 in 2	open face	..	..	..	..	135	..	135	73	208	2	..	2	..	..	..	..	..	18/11/10
Kearns' Mine	Kearns, R. L. (permit)	1	"	1	5′	"	1 in 2	bord and pular	..	6′ x 5′	150′	adit	450	..	450	..	450	..	2	2	manual	Free d	rain	age	natural	18/11/10
Waitahu	Judd, James (permit)	8	"	2	12′ and 6′	8′ and 6′	1 in 4	ditto	..	12′ x 7′ 10′ x 6′	640′ 700′	"	158	..	158	2,818	2,976	1	2	3	horse	Free d	rain	age	"	16/11/10
Lankey's Creek (Progress Company, owners)	Turnbull, D. (permit)	8	"	1	2′ to 20′	2′ to 12′	1 in 20	"	..	6′ 6″ x 5′ 6″	350′	"	3,098	..	3,098	12,097	15,195	2	5	7	manual	Free d	rain	age	"	17/11/10
Loughnan's Mine	Burwirth, W. (permit)	5	"	1	6′	all	variable	"	..	6′ x 5′	130′	"	3,076	..	3,076	2,613	5,689	1	3	4	"	Free d	rain	age	"	18/11/10
Merrijigs Mine	Osborne, W. (permit)	2	"	1	2′ 6″	"	"	"	..	6′ x 5′	220′	"	62	..	62	171	233	..	2	2	"	Free d	rain	age	"	18/11/10
Greymouth.																												
Paparoa	Patterson, D. S. A.	1½	"	3	3′ to 15′	"	"	"	..	10′ x 7′ 6″	3,000′	endless rope	17,215	19,381	36,596	7,199	43,795	31	106	137	gravity	Free d	rain	age	fan	13/12/10
Blackball	Hamilton, J. ..	20	"	2	17′	15′	1 in 6	"	..	9′ x 6′ 10′ x 7′	1,232′ 600′	ditto	115,822	50,683	166,505	1,146,620	1,313,125	58	230	288	steam	6″	4″	90′	"	14/12/10
Brunner	Armstrong, J. ..	46	"	1	12′	all	1 in 4	"	..	12′ x 10′	22 ch.	adit	18,030	21,720	39,750	2,225,715	2,265,465	18	72	90	"	Free d	rain	age	"	6/12/10
North Brunner	Smith, George ..	1	"	2	12′ and 5′ 6″	"	1 in 2 and 1 in 4	"	..	9′6″x 6′6″	100′	"	10,922	..	10,922	..	10,922	36	102	138	"	Free d	rain	age	"	10/12/10
No. 1 Point Elizabeth State Colliery	Coulthard, John, and Herd, Joseph	6½	"	1	8′	"	1 in 5	"	..	10′ x 7′	726′ 792′	"	117,090	95,798	212,888	1,011,683	1,224,571	100	387	487	"	33″ 36″	8″ 12″	380′ 520′	"	8/12/10
No. 2 Point Elizabeth State Colliery	Bishop, James ..	..	..	..	(Under development)			rock tunnels	..	11′ x 7′	3,840′	..	..	..	..	..	..	64	44	108	..	..	..	..	..	9/12/10
								coal tunnel	..	8′ x 7′	20 ch.															
Output of mines included in previous statements at which operations are abandonded ..																1,532,819	1,532,819									

SOUTHERN INSPECTION DISTRICT.

Canterbury.																										
Springfield, Springfield ..	Taylor, James (permit)	34	brown	2	2′	all	1 in 6	bord and pillar	1	6′ x 4′	80′	shaft	347	..	347	90,751	91,098	1	5	6	steam	direct steam	-acting	exhaust steam from pump	..
			fireclay	1	5′	4′																				
Springfield Fireclay, Springfield	Wilson, W. (permit)	10	brown	1	2′	all	1 in 6	ditto	1	4′ 6″ x 3′ 6′ x 5′	50′ 200′	adit	..	..	..	472	472	1	3	4	horse	steam	- pump	ditto	..
			fireclay	1	10′																					
Sheffield Fireclay, Sheffield ..	Smith, E. ..	..	fireclay	1	8′	"	1 in 10	..	..	..	..	..	..	..	..	..	..	..	2	2	..	..	..	..	natural	..
Homebush, Glentunnel ..	Campbell, J. C. ..	38	brown	2	5′ & 7′	"	1 in 3	bord and pillar	1	6′ x 3′ 6″ 7′ x 6′ 6′ x 6′	50′ 40 ch. 7 ch.	tunnel	13,363	1,386	14,749	239,671	254,420	5	32	37	steam & horse	..	..	..	furnace	..

Statistics of Workings in Coal-mines, 1910—*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 1910.			Approximate Total Output to 31st December, 1909.	Approximate Total Output to 31st December, 1910.	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.*																										
CANTERBURY—*continued.*													Tons.	Tons.	Tons.	Tons.	Tons.									
St. Helen's, Whitecliffs ..	Thin, W. (permit)	29	brown	4	8′ 5′ 4′ 6″ 3′	all	1 in 3	pillar, slope, and wall	1	4′ x 3′ 6′ x 5′	80′ 5 ch.	adit	822	..	822	18,846	19,668	1	3	4	steam	..	..	..	exhaust steam from pump	..
Mount Somers, Mount Somers	Hamilton, J. S...	9	"	1	20′	10′	south 1 in 4½	bord and pillar	1	5′ x 4′ 7′ x 6′	25′ 10 ch.	"	3,807	2,694	6,501	32,885	39,386	2	7	9	self-acting	..	..	..	natural	..
Albury, Albury	Gray, Hugh (permit)	19	"	1	10′	7′	1 in 1	ditto	1	4′ x 3′ 6″	jig 25 ch. 68′	"	1,089	..	1,089	10,537	11,626	..	2	2	horse	..	..	..	"	..
Stoney Creek, Waihao Forks	Watson, D. L. (permit)	21	lignite	1	22′	all	..	"	..	6′ x 6′	150 yd.	"	86	..	86	2,276	2,362	..	1	1	hand	..	..	..	"	..
Elephant Hill, Waihao Downs	Richards, E. ..	42	brown	1	14′	8′	1 in 6	"	..	6′ x 5′	20 ch.	"	..	..	..	668	668	..	..	..	"	..	..	..	"	..
Private Pits.																										
Snowdon, Rakaia Gorge ..	Gerard, G. ..	23	"	1	14′	8′	1 in 3	narrow	1	4′ x 4′	90′	shaft	..	..	..	1,808	1,808	..	..	..	"	..	..	..	"	..
Craigieburn, West Coast Road	Manson, D. ..	14	"	1	..	..	..	open	..	..	..	open	..	..	..	423	423	..	..	..	"	..	..	..	..	..
Dalgety, Hakataramea ..	Jackson, R. ..	29	"	1	30′	..	semi-vertical	bord and pillar	..	..	..	adit	114	..	114	2,850	2,964	..	1	1	horse	..	..	..	natural	..
NORTH OTAGO.																										
Wharekuri, Wharekuri ..	Shanks, A. ..	..	"	1	40′	13′	vertical	levels	..	..	..	..	..	..	..	2,579	2,579	..	..	..	hand	..	..	..	"	..
Kurow, Kurow	Sanderson, J. ..	14	"	1	indefinite	30′	"	stoping	1	8′ x 6′ 4′ x 4′	20′ 150′	lip drive	450	..	450	3,965	4,415	..	1	1	horse	..	..	..	"	..
Otiake, Otiake	Taylor, G. ..	6	"	1	18′	12′	"	..	..	6′ x 5′	200′	adit	10	..	10	318	328	..	1	1	"	..	..	..	"	..
St. Andrew's, Papakaio ..	Nimmo, T. (permit)	32	"	1	7′	6′	1 in 4	bord and pillar	1	4′ x 3′ 6′ x 6′	60′ 5 ch.	"	1,600	..	1,600	43,229	44,829	1	4	5	"	..	..	..	furnace	..
Prince Alfred, Papakaio ..	Beardsmore, A. (permit)	41	"	1	1′ to 9′	all	1 in 9	ditto	1	4′ x 3′ 5½′ x 6′	51′ 5 ch.	"	952	..	952	54,214	55,166	1	2	3	"	..	..	..	natural	..
Ngapara, Ngapara	Nimmo, W. (permit)	32	"	1	25′	8′	1 in 17	"	1	4′ x 4′ 6′ x 6′	50′ 10 ch.	"	846	..	846	26,231	27,077	1	2	3	"	..	..	..	"	..
Broadleaf, Shag Point ..	Brooke, G. W. (permit)	2	pitch	1	5′	all	..	"	..	..	150′	"	940	..	940	242	1,182	2	4	6	hand	..	..	..	"	..
Shag Point Company's, Shag Point	Clarke, E. ..	2	"	1	3′	"	..	longwall	..	..	150′	"	1,845	754	2,599	94	2,693	1	10	11	horse	..	..	..	"	..
Allandale, Shag Point ..	McIntosh, A. ..	23	"	3	4′ 6′ 12′	"	1 in 4	bord and pillar & longwall	2	10′ x 6′ 8′ x 4′	1,000′ 280′	incline tunnel	2,529	..	2,529	310,581	313,110	3	11	14	steam	electric			fan	..

South Otago.																									
Fernhill, Abbotsford ..	Gray, James ..	33	brown	1	10′	„	1 in 10	bord and pillar	1	4½′ x 4½′ 6′ x 6′	50′ 10 ch.	level	46	1,281	1,327	148,227	149,554	5	3	8	horse	..	..	..	natural	..
Freeman's, Abbotsford ..	Gillanders, A. S.	30	„	2	7′ to 14′	„	1 in 7	ditto	3	5′ x 4′ 6′ x 5′ 7′ x 7′	150′ 1,400′ 264′	dip incline drive	17,579	3,857	21,436	406,110	427,546	6	33	39	steam & horse	..	..	..	fan	..
Green Island, Green Island ..	Barclay, T., jun.	23	„	1	14′	10′	1 in 10	„	..	..	..	adit	2,530	..	2,530	112,474	115,004	2	4	6	ditto	Tangye			natural	..
Jubilee, Saddle Hill ..	Barclay, T. ..	13	„	1	17′	all	1 in 10	„	2	4′ x 3′ 6′ x 5′	150′ 20 ch.	„	16,089	4,260	20,349	169,264	189,613	5	22	27	„	..	..	..	furnace	..
Burnweil, Saddle Hill ..	Harris, A. ..	29	„	1	20′	10′ to 15′	1 in 9	„	1	6′ x 4′	6 ch.	tunnel	1,382	..	1,382	67,816	69,198	2	2	4	„	..	..	..	natural	..
Saddle Hill (No. 1), Saddle Hill	Christie, W. H. L.	38	„	1	20′	all	1 in 10	„	4	5′ 10″ x 4′ 6″	100′ 10 ch.	inclined drive	2,826	4,230	7,058	184,648	191,706	3	10	13	„	..	..	..	furnace	..
Saddle Hill (No. 2), Saddle Hill	Hill, Robert ..	9	„	1	22′	10′	1 in 14	„	1	..	..	adit	5,173	11,422	16,595	120,987	137,582	9	21	30	„	..	..	..	fan	..
Lauriston, Brighton ..	Walker, Robert (permit)	24	„	1	6′	5′ 6″	variable	„	1	..	48′	tunnel	207	..	207	7,545	7,752	1	1	2	horse	..	..	..	natural	..
Brighton, Brighton ..	McColl, Alvan (permit)	23	„	1	4′	all	1 in 20	„	1	4′ x 3′ 30′ x 4′	48′	„	158	..	158	2,828	2,986	1	1	2	hand	..	..	..	„	..
Ferndale, Taieri Beach ..	Fairbairn, S. H. ..	27	„	1	10′	8′	..	„	..	10′ x 8′	100′	„	28	..	28	945	973	..	1	1	„	..	..	..	„	..
Waronui, Milton	Carruthers, J. ..	6	„	1	18′	..	1 in 7	„	1	6′ x 6′	40 ch. 12 ch.	level	9,087	2,875	11,962	56,209	68,171	14	16	30	electric	..	..	..	fan	..
Cooper's (late Glenledi), Tokoiti	Cooper, J. J. (permit)	6	„	1	22′	all	1 in 8	„	..	..	..	adit	1,525	..	1,525	4,243	5,768	1	2	3	horse	..	..	..	natural	..
Wallsend, Lovell's Flat ..	Hewitson, R. ..	39	lignite	1	20′	„	..	open	..	..	..	open	..	..	..	11,539	11,539	..	..	..	hand	..	..	..	..	..
Benhar, Stirling	Murdoch, C. (permit)	47	„	1	20′	12′	..	bord and pillar	..	4′ x 4′ 6′ x 6′	50′ 5 ch.	incline	4,002	787	4,789	125,710	130,499	1	5	6	steam	..	..	..	natural	..
Taratu, Taratu	Shore, Thomas ..	9	brown	1	20′	8′ to 12′	1 in 10	ditto	2	6′ x 4′ 13′ 6″ x 5′ 2″	185′ 200′	shaft	9,996	5,093	15,089	124,367	139,456	12	27	39	„	Tangye			fan	..
Kaitangata ..	Carson, W. (N.Z. Coal and Oil Co..	34	„	3	50′ in aggregate	all	1 in 1½ to 1 in 4	„	2	10′ x 7′ 8′ x 4′ 6″	51 ch. 580′	inclined	86,953	51,987	138,940	2,440,412	2,579,352	67	254	321	steam & compressed air	2′ 6″ three-throw pumps	6″	280′	„	..
Castle Hill, Kaitangata	Ltd.; O. G. Lockhart, sec.)	17	„	4	50′ in aggregate	„	1 in 1½ to 1 in 4	„	1	11′ x 6′ 6″ 9 diam.	45 ch. 526′	„									ditto	ditto	6″	500′	furnace	..
Port Arthur, Kaitangata ..	Penman, R. (permit)	6	„	1	10′	„	..	„	..	..	66′	level	270	..	270	402	672	..	1	1	hand	..	..	..	natural	..
Hawthorn Den, Kaitangata..	Cunningham, T. (permit)	2	„	1	9′	„	..	open	..	..	..	open	95	..	95	116	211	..	1	1	„	..	..	..	..	..
Longridge, Kaitangata ..	Mackie, N. (permit)	2	„	1	..	..	..	bord and pillar	..	..	100′	adit	690	..	690	91	781	..	3	3	„	..	..	..	natural	..
Wangaloa, Kaitangata ..	Smith, J. ..	30	„	1	10′ 6″	8′	1 in 6	ditto	..	..	..	„	30	..	30	1,996	2,026	..	1	1	„	..	..	..	„	..
Adams', Clydevale ..	Acton Adams ..	2	lignite	1	4′	all	..	open	..	..	..	open	72	..	72	98	170	1	..	1	„	..	..	..	..	..
Mainholm, Waipahi ..	Lischner, W. (permit)	25	„	1	20′	„	..	„	..	..	..	„	2,257	..	2,257	52,268	54,525	3	..	3	horse	centrifugal steam-driven			..	..
Private Pit.																									
Lakeside, Lovell's Flat ..	Royds, G. E. ..	10	brown	1	..	..	..	..	..	..	..	..	30	..	30	1,133	1,163	..	..	..	..	..	..	..	..	..
Central Otago.																									
Coal Creek, Coal Creek Flat..	Barber, J. ..	40	lignite	2	..	..	..	open	..	..	..	open	1,828	..	1,828	52,009	53,837	2	2	4	horse	siphon			..	..
McPherson's, Coal Creek Flat	McPherson, A. J. (permit)	40	„	1	80′	..	..	bord and pillar	..	..	..	adit	1,664	..	1,664	52,347	54,011	..	5	5	„	..	..	..	natural	..
Perseverance, Coal Creek Flat	Vernon, S. E. P. (permit)	23	„	1	75′	70′	1 in 3	ditto	..	6′ x 7	500′	„	3,070	..	3,070	45,316	48,386	1	4	5	Pelton wheel	hydraulic jet pump			„	..

Statistics of Workings in Coal-mines, 1910—*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. Size of Shaft or Adit.	Dimensions of Shafts. Depth of Shaft or Length of Adit.	Output delivered by	Output for 1910. Coal.	Output for 1910. Slack.	Output for 1910. Total.	Approximate Total Output to 31st December, 1909.	Approximate Total Output to 31st December, 1910.	Number of Men ordinarily employed. Above	Number of Men ordinarily employed. Below.	Number of Men ordinarily employed. Total.	Power used for drawing Mineral.	Pumps. Stroke.	Pumps. Size of Barrel.	Pumps. Height of Column	Means of Ventilation.	Date of Inspector's Last Visit.
SOUTHERN INSPECTION DISTRICT—*continued*.													Tons.	Tons.	Tons.	Tons.	Tons.									
CENTRAL OTAGO—*continued*.																										
Alexandra, Alexandra ..	Barnes, A. E. ..	30	lignite	1	14′	7′	1 in 7	bord and pillar	1	5′ x 2′ 6″ 6′ x 4′	60′ 15 ch.	adit	3,373	..	3,373	71,809	75,182	1	8	9	steam	Snow pump			exhaust steam from pump	..
Molyneux (New Alexandra Coal Company), Alexandra	Pollock, J. ..	12	"	1	28′	9′	1 in 20	"	2	6′ x 4′ 5′ x 4′	60′ 80′	shaft	5,848	1,360	7,208	93,497	100,705	4	13	17	"	3-throw ram pump	Snow pump		steam and exhaust from engine	.. haust pump-line
Cambrian, Cambrian ..	McGuckin, J. ..	26	"	1	9′	all	..	open	..	..	..	open	..	..	..	14,488	14,488	..	..	..	horse	..	..	..	..	..
Welshman's Gully, Cambrian	McGuckin, J. (permit)	49	"	1	30′	"	..	"	..	..	..	"	73	..	73	33,116	33,189	1	..	1	"	..	..	..	..	..
Laudervale (Jones's), Cambrian	Jones, Robert ..	6	"	1	..	"	..	"	..	..	..	"	168	..	168	266	434	1	..	1	"	..	..	..	..	..
St. Bathan's, St. Bathan's ..	Enwright, J. ..	13	"	1	indefinite	15′	..	"	..	..	..	"	222	..	222	4,816	5,038	2	..	2	"	drainage tunnel			..	..
Rough Ridge, Oturehua ..	Beck, W. (permit)	24	"	1	35′	all	..	"	..	..	..	"	781	..	781	25,057	25,838	2	..	2	"	..	..	..	..	..
Idaburn (White's), Oturehua	White, J. (permit)	40	"	1	20′	"	..	"	..	..	..	"	775	..	775	40,536	41,311	2	..	2	"	..	..	..	..	..
Oturehua, Oturehua ..	Thomas, R. (permit)	..	"	1	7′	"	..	"	..	..	..	"	336	..	336	489	825	1	..	1	"	two pumps water-driven	Douglas pumps		..	..
Gimmerburn, Gimmerburn ..	Dougherty, C. ..	54	"	1	12′	"	..	"	..	..	..	"	48	..	48	3,013	3,061	1	..	1	hand	..	..	..	..	..
Clyde (includiug Dairy Creek, Clyde)	Turner, G. F. ..	38	brown	2	40′	14′	1 in 2	levels	..	..	..	dip incline	2,159	..	2,159	53,764	55,924	1	4	5	steam	steam-driven			natural	..
Cardrona, Cardrona ..	McDougal, R. (permit)	26	"	1	30′	all	vertical	open	..	..	..	open	473	..	473	23,876	24,349	4	..	4	horse	..	..	..	..	..
Gibbston, Gibbston ..	Duncan, J. ..	24	"	1	15′ to 40′	"	1 in 3	bord and pillar	..	..	22 ch.	adit	843	..	843	16,914	17,757	1	2	3	steam	..	..	..	natural	..
Shepherd's Creek, Bannockburn	Hodson, J. (Cromwell and Bannockburn Collieries Co.; T. K. Harty, managing director)	33	"	1	8′	7′	1 in 4	ditto	1	4′ x 3′ 6′ x 6′	34′ 897′ 200′	incline	5,233	..	5,233	60,426	65,659	4	13	17	"	steam	driven		exhaust steam from pump	..
Excelsior, Bannockburn		16	"	1	6′	5′	1 in 4	"	1	6′ x 5′ 6″	20 ch.	adit	..	..	..	59,202	59,202	..	..	..	"	steam-driven			natural	..
Cairnmuir, Bannockburn ..	Whittlestone, A. W.	8	"	1	20′	10′	1 in 1 to 1 in 2	levels & headings	2	..	..	dip incline	3,769	..	3,769	17,116	20,885	1	8	9	"	steam-driven			"	..
Ranfurly, Bannockburn ..	Hodson, J. ..	..	..	..	..	..	..	..	..	..	..	..	654	..	654	..	654	1	3	4	..	..	..	..	"	..
Nevis, Nevis	Toms, R. ..	14	brown	1	20′	all	vertical	open	..	..	..	open	..	..	..	5,589	5,589	..	..	..	hand	..	..	..	..	..
Ryder's, Nevis	Toms, R. (permit)	10	"	1	45′	"	semi-vertical	bord and pillar	..	..	..	adit	946	..	946	5,132	6,078	1	3	4	"	..	..	..	natural	..
Nevis Crossing, Nevis ..	Ritchie, Robert (permit)	7	"	1	..	"	semi-vertical	open	..	..	..	open	625	..	625	7,339	7,964	1	..	1	"	..	..	..	..	..

Private Pits.																										
Donaldson's, Mount Highlay	Donaldson, W. and G.	4	"	1	10′	"	..	"	..	..	..	"	440	..	440	933	1,373	2	..	2	horse	wat	r-b	ox	..	..
Kyeburn, Kyeburn	McCready, W. J.	26	"	1	..	..	vertical	levels	..	..	..	adit	..	..	..	15,452	15,452	..	..	..	hand	..	..	..	natural	..
McKnight's, Blackstone Hill	McKnight, D. ..	13	lignite	1	12"	all	..	open	..	..	..	open	8	..	8	193	201	..	..	..	"	..	..	..	..	..
SOUTHLAND.																										
Pukerau, Pukerau	Hamilton, J. (permit)	30	"	1	16′	8′ to 10′	1 in 10	bord and pillar	1	8′ x 8′	11 ch.	adit	889	..	889	35,371	36,260	..	2	2	horse	wi	ndm	ill	natural	..
Nelson's, Pukerau	Nelson, J. H. (permit)	21	"	1	16′	10′	..	ditto	..	..	..	"	129	..	129	4,133	4,262	..	1	1	hand	Do	ug	las	"	..
Heffernan's, Gore	Hoffman, James (permit)	32	"	1	15′	10′	..	"	1	6′ x 5′	..	incline tunnel	1,966	..	1,966	47,671	49,637	1	1	2	horse	ha	nd-	pump	"	..
Green's, Gore	Johnson, W. (permit)	22	"	1	17′	12′	1 in 20	"	1	10′ x 8′	5 ch.	ditto	9,351	..	9,351	93,666	103,017	1	6	7	"	T	ang	ye	fan	..
Smyth's, Gore	Broome, J., jun. (permit)	14	"	1	16′	12′	1 in 20	"	1	..	..	"	2,107	..	2,107	18,962	21,069	1	3	4	"	T	ang	ye	natural	..
Bushy Park, Croydon ..	Dixon, W. (permit)	5	"	1	20′	12′	..	open	..	..	..	open	1,754	..	1,734	11,827	13,561	2	..	2	"	Cali	forn	ian	..	..
Happy Valley, Croydon ..	Tweedie, George (permit)	1	"	1	..	..	..	"	..	..	..	"	60	..	60	..	60	1	..	1	..	p	um	p	..	..
Burnwell, Chatton	Cameron, D. (permit)	11	"	1	20′	12′	1 in 10	bord and pillar	..	20′ x 12′	100′	adit	4,280	..	4,280	19,200	23,480	1	3	4	horse	han	d-p	ump	natural	..
Pacey's freehold, Chatton ..	Buchols, J. (permit)	7	"	1	20′	14′	..	ditto	..	..	..	"	3,440	..	3,440	34,269	37,709	..	3	3	steam	han	d-p	ump	"	..
Chatton, Chatton	Ramsay, G. (permit)	8	"	1	20′	12′	1 in 5	"	1	..	..	"	1,401	..	1,401	9,586	10,987	..	2	2	horse	d r	ai	n	"	..
Thorndale, Waikaka Valley ..	Highsted, Thomas	11	"	1	10′	all	..	open	..	..	..	open	16	..	16	8,146	8,162	1	..	1	"	..	..	..	..	..
Springfield, Waikaka Valley	Nee Chang, Edward (permit)	17	"	1	15′	8′	..	bord and pillar	..	..	..	adit	1,960	..	1,960	20,156	22,116	2	2	4	"	steam-	d r	iven	natural	..
Willow Bank, Waikaka Valley	Jones, W. (permit)	14	"	1	15′	10′	..	ditto	..	..	..	"	7,288	..	7,288	44,756	52,044	1	6	7	steam	two	Dou	glas	..	..
Glenlee, Waikaka Valley ..	McGill, D. T. ..	17	"	1	14′	10′	..	open	..	..	..	open	485	..	485	11,212	11,697	1	..	1	horse	p	um	ps	..	..
Edge's (late McDonald's), Waikaka Valley	McIvor, W. (permit)	11	"	1	16′	12′	..	bord and pillar	..	12′ x 12′	..	adit	3,162	..	3,162	22,773	25,935	1	3	4	steam	si	ph	on	natural	..
Landslip, Landslip, Waikaia	Kyle, W. (permit)	19	"	1	17′	all	..	ditto	1	..	60′	incline tunnel	1,644	..	1,644	33,184	34,828	..	2	2	"	steam-	d r	iven	"	..
Rossvale, Landslip, Waikaia	Bond, J. (permit)	7	"	1	10′	8′	..	"	2	6′ x 5′ 6′ x 4′	100′	adit	2,812	..	2,812	18,329	21,141	..	4	4	horse	..	..	..	"	..
Waikaia, Landslip, Waikaia ..	Cain, A. (permit)	3	"	1	10′	all	1 in 4	"	..	..	..	"	2,903	..	2,903	8,565	11,468	1	4	5	steam	steam-	driv	en	"	..
Muddy Terrace, Waikaia ..	Junker, F. (permit)	8	lignite and shale	1	14′	7′	..	"	..	..	..	dip incline	1,807	..	1,807	15,735	17,542	1	1	2	horse	..	..	..	"	..
Argyle, Upper Waikaia ..	Hutton, C. H. (permit)	19	lignite	1	20′	all	..	open	..	..	..	open	206	..	206	3,506	3,712	1	..	1	hand	..	..	..	..	..
Waimea, Kingston Crossing ..	Johnstone, J. E. (permit)	2	"	1	3′	"	..	bord and pillar	..	..	..	level	809	..	809	443	1,252	..	2	2	"	dr	ain		natural	..
Beer's, Mossburn	Sim, G. G. ..	8	"	1	6′	"	irregular	open	..	..	..	open	212	..	212	623	835	1	..	1	"	..	..	..	..	..

STATISTICS OF WORKINGS IN COAL-MINES, 1910—*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 1910.			Approximate Total Output to 31st December, 1909.	Approximate Total Output to 31st December, 1910.	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*.													Tons.	Tons.	Tons.	Tons.	Tons.									
Mataura Collieries (Limited), Mataura	Dixon, W. ..	14	ignite	1	17′	12′	..	bord and pillar	..	..	..	adit	7,670	..	7,670	117,649	125,319	3	5	8	steam	steam-	driven		natural	..
Mataura Lignite Pits, Mataura	Coster, W. (permit)	34	"	1	16′	all	..	open	..	..	..	open	10,779	..	10,779	84,015	94,794	8	..	8	horse	centr steam	ifugal -driven		..	..
Boghead, Mataura	Sleeman, C. P., jun. (permit)	12	"	1	16′	"	..	"	..	..	..	"	3,040	..	3,040	9,689	12,729	2	..	2	"	centr steam	ifugal -driven		..	..
Waimumu, Mataura ..	Wallace, J. (permit)	11	"	1	9′	7′	..	open and bord and pillar	..	..	..	open and adit	766	..	766	28,948	29,714	2	1	3	"	steam-	pump		natural	..
Brownhill, Mataura ..	Wallace, J. (permit)	0½	"	1	..	..	..	open	..	..	..	open	289	..	289	..	289	..	2	2	..	.	..	..	..	..
Ota Creek, Ota Creek ..	Genge, E. (permit)	30	"	1	6′	5′	..	"	..	..	..	"	580	..	580	14,594	15,174	1	..	1	horse	..	..	..	..	..
Clarke's, Wyndham ..	Clarke, G. W. (permit)	4	"	1	12′	all	..	"	..	..	..	"	1,440	..	1,440	5,902	7,342	2	..	2	"	centr pu	ifugal mp		..	..
Robin Hood, Pine Bush ..	Couser, W. (permit)	29	"	1	14′	"	..	"	..	..	..	"	102	..	102	3,003	3,105	1	..	1	"	..	..	..	..	..
Graham's, Fairfax	Graham, P. S. ..	32	"	1	6′	"	1 in 20	bord and pillar	..	..	6 ch.	adit	53	..	53	16,406	16,459	..	1	1	hand	..	..	..	natural	..
Ardlowie, Fairfax	Poole, E. ..	8	"	1	..	"	..	open	..	..	..	open	140	..	140	747	887	1	..	1	"	..	..	..	..	..
Nightcaps, Nightcaps ..	Barclay, W. (Nightcaps Coal Company; W. Handyside, managing director)	29	brown	3	36′ in aggregate	24′ in aggregate	variable to 1 in 7	open and bord and pillar	3	4′ x 4′ 4′ x 4′ 6″ 5′ x 5′	32 ch. 25½ ch.	open and adit levels	58,010	..	58,010	666,315	724,325	29	68	97	com-pressed air and horse	comp a	ress ir	ed	fans	..
Wairaki, Nightcaps ..	McDowell, R. (permit)	10	"	1	6′	all	..	bord and pillar	..	..	..	adit	2,110	..	2,110	7,791	9,901	1	3	4	horse	oil-eng p	ine um	and p	natural	..
H.B., Nightcaps	McGregor, R. (permit)	12	"	1	7′	"	..	ditto	..	..	..	"	1,071	..	1,071	9,360	10,431	1	1	2	"	..	..	..	"	..
New Brighton, Nightcaps ..	McKenzie, D. (permit)	3½	"	1	20′	"	..	open and bord and pillar	..	..	..	open and adit	3,642	..	3,642	4,399	8,041	1	7	8	"	..	..	..	"	..
The Willow, Nightcaps ..	Clarke, J. ..	11	"	1	14′	"	..	open	..	..	..	open	40	..	40	2,365	2,405	1	..	1	"	sip	hon		..	..
Wairio, Nightcaps	Wairio Coal Company (J. McMeekin, manager)	5	"	1	17′	9′	..	bord and pillar	..	8′ x 8′	2 ch.	adit	..	..	..	3,580	3,580	..	..	..	steam	Pair Gou 5″	ld's p 5′	umps 12′	natural	..

Beaumont, Nightcaps ..	Moss, W. (permit)	2	"	1	20′	15′	1 in 4	open	..	..	..	open	951	..	951	306	1,257	3	..	3	..	centrifugal pump			..	..
Mount Linton, Nightcaps ..	Smith, William ..	16	"	1	10′	8′	..	"	..	..	..	"	50	..	50	651	701	2	..	2	horse	..	..	..	..	..
Wildbush, Riverton ..	Smith, William ..	3	"	1	11′	all	..	"	..	..	..	"	100	..	100	436	536	1	..	1	"	..	..	..	..	..
Bush Siding, Seaward Bush	Bowden, F. R. (permit)	8	"	1	32′	"	..	"	..	..	..	"	707	..	707	5,728	6,435	2	..	2	"	..	..	..	..	..
Private Pits.																										
Wellwood Park, Pukerau ..	Mason, A. M. W.	9	lignite	1	7′	"	..	"	..	..	..	"	24	..	24	178	202	..	..	..	..	..	..	..	..	..
Mason's, Pukerau	Mason, A., jun. ..	3	"	1	7′	"	..	"	..	..	..	"	2	..	2	25	27	..	..	..	..	..	..	..	..	..
Otikerama Station (late Glover's), Pukerau	Voight, W. J., jun.	13	"	1	7′	"	..	"	..	..	..	"	18	..	18	267	285	..	..	..	..	..	..	..	..	..
Smith's, East Gore.. ..	Smith, H. ..	7	"	1	7′	all	..	"	..	..	..	"	..	..	..	47	47	..	..	..	..	..	..	..	..	..
Riverview, Gore	Nicol, J. and J. ..	19	"	1	..	..	..	"	..	..	..	"	45	..	45	1,679	1,724	..	..	..	..	..	..	..	..	..
Cross's, Otama	Cross Bros. ..	12	"	1	4′	all	..	"	..	..	..	"	..	..	..	169	169	..	..	..	..	..	..	..	..	..
Ford's, Chatton	Ford, P. ..	30	"	1	..	"	..	"	..	..	..	"	..	..	..	1,284	1,284	..	..	..	..	..	..	..	..	..
Perkins's, Wendon Valley ..	Perkins, G. A. ..	9	"	1	7′	"	..	"	..	..	..	"	10	..	10	77	87	..	..	..	..	..	..	..	..	..
Tuach's, Waimumu ..	Tuach, J. ..	4	"	1	..	..	..	"	..	..	..	"	13	..	13	50	63	..	..	..	..	..	..	..	..	..
Wyndham, Wyndham ..	Irvine, D. ..	15	"	1	..	..	..	"	..	..	..	"	..	..	..	328	328	..	..	..	..	..	..	..	..	..
McBride's, Nightcaps ..	McBride, A. ..	2	brown	1	10′	all	..	"	..	..	..	"	4	..	4	9	13	..	..	..	..	..	..	..	..	..
Blackmount, Blackmount ..	Studholme, A. ..	..	"	1	5′	"	1 in 4	"	..	..	..	"	..	..	..	58	58	..	..	..	..	..	..	..	..	..
Linwood, Te Anau	..	10	lignite	1	7′	"	..	"	..	..	..	"	200	..	200	1,320	1,520	1	..	1	..	..	..	..	..	..
Output of mines included in 1909 statement, at which operations are suspended	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,802,374	1,803,374	..	..	..	..	..	..	..	..	..
Totals, Southern District, Middle Island	..	..	..	..	..	..	..	..	..	..	..	..	363,680	91,986	455,666	8837625	9293291	265	697	962						
Totals, West Coast District, Middle Island	..	..	..	..	..	..	..	..	..	..	..	..	914,916	426,116	1341032	14730414	16071446	712	2087	2799						
Totals, North Island	..	..	..	..	..	..	..	..	..	..	..	..	337,640	63,024	400,664	5154368	5555032	159	679	838						
Grand Totals ..	..	..	..	..	..	..	..	..	..	..	..	..	1616236	581,126	2197362	28722407	30919769	1136	3463	4599						

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)	132,732
Output of mines included in former statements, but whose operations were suspended prior to 1889	172,529
Output of Waikaka, Adam's Flat, and Waimea Mines, inserted twice in statement for 1891	6,518
	31,231,548

Approximate Cost of Paper.—Preparation (not given); printing (1,800 copies), £38.

By Authority: JOHN MACKAY, Government Printer, Wellington.—1911.

Price 1s.]