1907.

NEW ZEALAND.

INSPECTION OF COAL-MINES REPORT.

("THE COAL-MINES ACT, 1905.")

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

Mr. FRANK REED, M.Inst.M.E., Lic. Surveyor, Inspecting Engineer, to the UNDER-SECRETARY, Mines Department.

SIR,— Mines Department, Wellington, 11th April, 1907.

I have the honour to submit the annual reports of inspection, together with statistical information in regard to the coal-mines of the colony for the year ended 31st December, 1906.

The reports are divided into the following Sections :—

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

Appendices—

(*a.*) Inspectors' Reports.
(*b.*) Mine-managers' Examinations.
(*c.*) Statistics of Working-collieries.

SECTION I.—OUTPUT OF MINERAL.

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

Class of Coal, &c.	Northern District.	West Coast District.	Southern District.	Total.
	Tons.	Tons.	Tons.	Tons.
Bituminous and semi-bituminous coal ...	120,700	956,708	...	1,077,408
Pitch-coal	...	2,957	22,004	24,961
Brown coal...	180,486	3,250	337,267	521,003
Lignite	...	...	106,164	106,164
Totals...	**301,186**	**962,915**	**465,435**	**1,729,536**

As compared with the output for the preceding year, the above statement shows an increase of 143,780 tons, and the comparison of the relative increase and decrease of the different classes of coal, &c., won during the year 1906 is given in the following tabulated form :—

Class of Coal, &c.	Northern District.		West Coast District.		Southern District.		Total Increase.	Total Decrease.	Total Net Increase.
	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.			
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Bituminous and semi-bituminous coal	6,251	...	106,074	...	...	...	...	...	...
Pitch-coal	...	...	90	...	1,799	...	..	...	...
Brown coal ...	35,059	...	524	...	...	11,516	...	...	...
Lignite	...	...	...	...	5,499	...	...	...	...
Totals ...	**41,310**	...	**106,688**	...	**7,298**	**11,516**	**155,296**	**11,516**	**143,780**

The total number of mines returned as being worked during the year was 150, of which sixteen employ more than twenty persons, and are therefore required by "The Coal-mines Act, 1905," to be under the control and supervision of a first-class certificated mine-manager. Mines employing over six but not exceeding twenty persons number forty-three, and for their management the holders of first- or second-class certificates must be employed. For mines at which not more than six persons are employed a competent person holding a permit from the Inspector of Mines for the district may be employed.

SECTION II.—PERSONS EMPLOYED.

Inspection District.	Average Number of Persons employed during 1906.		
	Above ground.	Below Ground.	Total.
Northern	111	406	517
West Coast	731	1,313	2,044
Southern	332	799	1,131
Totals, 1906	**1,174**	**2,518**	**3,692**
Totals, 1905	833	2,436	3,269

SECTION III.—ACCIDENTS.

Summary of fatal and non-fatal accidents classified, and cause :—

—	Fatal Accidents.		Non-fatal Accidents.	
	Number of Separate Fatal Accidents.	Number of Deaths.	Number of Separate Non-fatal Accidents.	Number of Persons injured, including those injured by Accidents which proved Fatal to their Companions.
Explosions of firedamp ...	...	...	2	4
Falls in mine	2	2	12	12
Shaft accidents	...	...	1	1
Miscellaneous—				
Underground	2	3	13	13
On surface	1	1	...	...
Totals	**5**	**6**	**28**	**30**

The following table shows a comparison of the output and death-rate in respect of coal and shale mines in New Zealand, and certain other countries, for the years 1904–6 inclusive :—

Country or State.	Death-rate from Accidents per 1,000 Persons employed.	Number of Persons employed per Life lost.	Tons of Mineral raised per Life lost.	Tons of Mineral raised per each Person employed Underground.
New Zealand—				
1904	1·21	822	384,459	609
1905	1·83	546	264,293	651
1906	**1·62**	**615**	**288,256**	**687**
New South Wales—				
1904	0·847	1,180	501,651	541
1905	1·69	589	277,932	599
1906	1·38	723	364,705	650
Great Britain—				
1904	1·244	803	232,962	360
1905	1·35	740	215,515	361
Transvaal, 1905–6	3·86	643	29,289	455
United States of America, seventeen States providing 90 per cent. total output	3·53	275	175,000	...

The following statement shows the tons of mineral raised (coal and shale), persons employed, lives lost, &c., from 1878 to 1906 :—

Year.	Output of Mineral.	Persons employed.			Tons of Mineral raised per Life lost.	Persons employed per each Life lost.	Lives lost per Thousand Persons employed.	Tons of Mineral raised per each Person employed Underground.	Number of Deaths.
		Above.	Below.	Total.					
Prior ...	709,931	...	...	...	...	...	...	...	...
1878 ...	162,218	147	366	513	4,771	15	66·27	443	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	210,882	624	1·60	475	2
1884 ...	480,831	393	890	1,283	160,277	421	2·34	540	3
1885 ...	511,063	338	1,145	1,483	170,354	494	2·01	456	3
1886 ...	534,353	392	1,213	1,605	*	*	*	440	0
1887 ...	558,620	388	1,111	1,499	139,655	375	2·66	503	4
1888 ...	613,895	414	1,275	1,689	153,474	422	2·36	481	4
1889 ...	586,445	466	1,251	1,717	146,611	313	2·37	261	4
1890 ...	637,397	512	1,334	1,846	79,674	231	4·33	477	8
1891 ...	668,794	416	1,277	1,693	167,198	423	2·36	523	4
1892 ...	673,315	485	1,196	1,681	673,315	1,681	0·66	563	1
1893 ...	691,548	590	1,298	1,888	138,309	377	2·64	533	5
1894 ...	719,546	506	1,393	1,899	119,924	316	3·16	516	6
1895 ...	726,654	525	1,274	1,799	145,331	360	3·33	618	5
1896 ...	792,851	590	1,347	1,937	12,013	29	34·07	588	66‡
1897 ...	840,713	531	1,381	1,912	210,178	478	2·09	609	4
1898 ...	907,033	556	1,447	2,003	907,033	2,003	0·49	627	1
1899 ...	975,234	554	1,599	2,153	325,078	717	1·39	609	3
1900 ...	1,093,990	617	1,843	2,460	273,497	615	1·62	593	4
1901 ...	1,239,686	688	2,066	2,754	413,228	918	1·09	600	3
1902 ...	1,365,040	803	2,082	2,885	682,520	1,443	0·69	655	2
1903 ...	1,420,229	717	2,135	2,852	355,057	713	1·40	665	4
1904 ...	1,537,838	763	2,525	3,288	384,459	822	1·21	609	4
1905 ...	1,585,756	833	2,436	3,269	264,293	546	1·83	651	6
1906 ...	1,729,536	1,174	2,518	3,692	288,256	615	1·62	687	6
Totals...	23,430,955	...	...	54,895	...	...	...	...	193

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

SECTION IV.—GENERAL REMARKS.

Ventilation.

Great improvements have of recent years been effected in the mechanical ventilation of coal-mines in this country, for whereas in 1891 only three ventilating-fans were employed, during the past year nineteen were in operation, those fans most favoured being of the Waddle, Schiele, Cappell, Hayes, and Sirocco types. The last named has recently been installed at the Taupiri, Point Elizabeth, and Seddonville Mines, and it is proposed to employ it at the new Westport-Stockton Mine. The Sirocco fan appears to have solved the question of centrifugal ventilation, for its construction is simplicity itself, and its efficiency unequalled. The fan consists of a drum varying from 35 in. to 100 in. in diameter, around the circumference of which are placed steel laths so arranged as to resemble a venetian blind open at its utmost, with the laths slightly convex to the forward direction, spaced 2 in., and 3 in. deep; the usual *évasée* chimney and shutter are attached to the case in which the machine is enclosed. This fan is extensively used in Great Britain, and it is claimed that one of the type 100 in. in diameter, running at 220 revolutions per minute, at 3 in. water-gauge, will deliver the enormous output of 532,000 cubic feet of air per minute.

Electricity in Mines.

The use of electricity, which has become so widespread in and about the mines of other countries, both for lighting and as a mode of transmitting power, has made hitherto but slow progress in the coal-mines of this country, owing probably to the fact that at many of the large mines the haulage is conducted on the self-acting principle by endless rope, and the drainage by level free adits, consequently pumping and winding from shafts is avoided. Electric lighting, however, is employed in the main roads underground and upon the surface works of several mines. At other mines less favourably situated, and where this economical power could be profitably employed, steam-power had been installed prior to the advent and more general application of electricity in mines. At the Allendale Colliery electric power for haulage, pumping, and lighting has been effectively employed for two years; at the Blackball Mine an underground pumping plant is worked electrically with satisfactory results; but at the Denniston Colliery compressed air was found to operate the coal-cutting machinery in a more satisfactory manner than electricity. At the Westport-Stockton Mine, now being opened up and equipped, it is proposed to employ electric power for coal-cutting, ventilation, lighting, and haulage, the latter by means of electric locomotives, by which it is proposed to use coal-tubs of 30 cwt. capacity, on a 2ft. gauge, throughout the workings of the mine, which may not be found to be a success, owing to the weight and size of the tubs on steep grades.

Mining Operations.

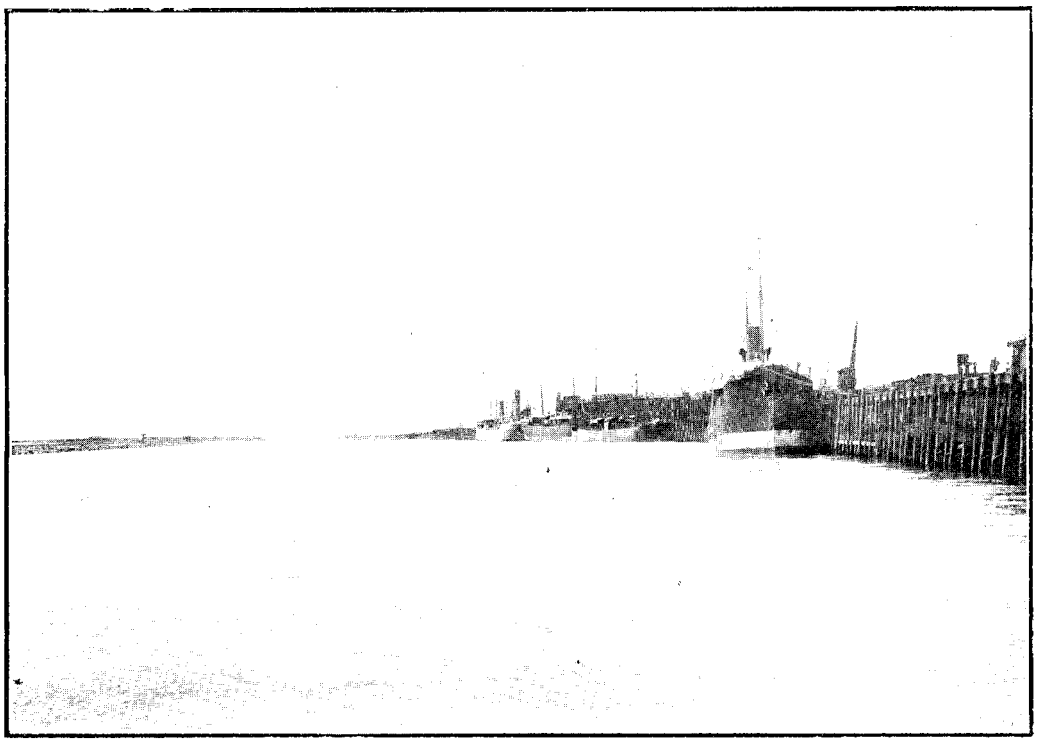
During the past year extensive preparations for an increased output were carried out on all the mining fields, and an annually increasing output of coal is assured. In the Northern District, at the Northern and Kiripaka Collieries, and at Hikurangi, extensive new coal-areas have been entered by underground workings; at Kawakawa Colliery boring operations on a new lease have proved a 6 ft. seam at a depth of 80 ft. At Taupiri Colliery the main (Ralph's) heading on the eastern side of the railway approaching Lake Wahi has opened a large field for operations. In the West Coast District, at the Seddonville State Mine, a promising area of hard bituminous coal has been entered on the south-western extension of the cave area; the workings at the Millerton Colliery have during the year reached Mangatini Creek, on the eastern side of which the larger portion of the coal-field is situated, and upon which mining operations will shortly be directed.

The satisfactory extension of mining operations at Denniston continues in the directions of Mount William and Deep Creek, which it is proposed to bridge to facilitate haulage; likewise for a similar purpose to construct a girder bridge across the Waimangaroa River. The dip sections of the Point Elizabeth State Mine have proved an extensive area of excellent coal, and considerable reserves are now standing in pillars. In the Southern District, at Kaitangata, a new ventilating-shaft has been sunk on coal to a depth of 552 ft., at a distance of 58 chains to the east of the mine-entrance, with the workings of which it is connected. To the east of this shaft an extensive and valuable area of coal is supposed to exist.

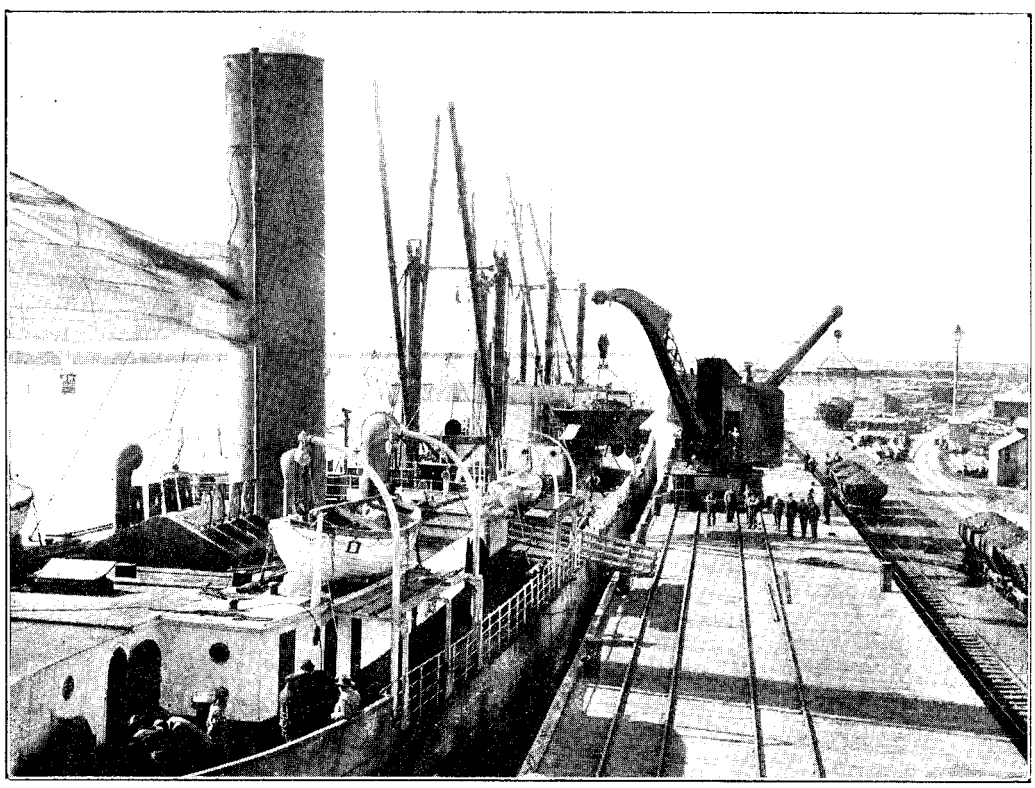
New Collieries.

Active operations are being carried out to develop the new collieries, the property of the Westport-Stockton Coal Company (Limited), situated near Millerton, and the Paparoa Coal-mining Company (Limited), situated near Blackball. At the Westport-Stockton property, inclined and other haulage roads and tramways are being constructed. The mouth of the mine is situated at a distance of three miles and three-quarters from and an altitude of 1,600 ft. above the Government railway at Ngakawau which is a further distance of about twenty miles by rail from the Harbour of Westport. It is proposed to negotiate the distance between the mine-mouth and the top of the incline by means of an electric tramway, two miles and a quarter long. This tramway will have an average inclination of 1 in 21·2 in favour of the full train, and will be worked by electric locomotives upon a 2 ft. gauge. From the top of the incline there is being constructed an endless-rope inclined haulage-plane, in two sections, in length one mile, and half a mile, and having respectively an average gradient of 1 in 4 and 1 in 6·7, but in no place exceeding 1 in 3. It is proposed to use hydraulic brakes similar to those employed at the Denniston and Millerton Collieries, but worked by four water-cylinders instead of two, to avoid any sudden strain upon the haulage-rope and machinery.

At the new Paparoa Mine, also situated at a considerable altitude above the Government railway at Blackball, now in course of construction, the works in progress embody the construction of one mile



Westport: The Loading-wharves, looking out to Sea.



Admiralty Collier loading at Westport.

and a quarter of railway to join with the Government line, the erection of coal-bins of about 5,000 tons capacity, also 50 chains of incline on a rising gradient of 1 in 3, and a high-level rock-tunnel, the whole system to be constructed and equipped for endless-rope haulage.

A new lease of 1,785 acres has recently been taken up by Mr. Jonathan Dixon, M.E., on the coastal plain near Sergeant's Hill Railway-station, three miles from the Harbour of Westport. This plain lies at the base of the hills upon which the Coalbrookdale Collieries are situated, and is bounded on the west by the ocean, to the north by the Waimangaroa River, and to the south by Cape Foulwind, and may cover an area of, approximately, twenty-five square miles. The probable existence of coal-measures under this plain has been reported upon by Sir James Hector, F.R.S., before the Royal Coal Commission, 1900, and by Mr. Alexander McKay, F.G.S., Government Geologist, in the "Geological Survey of New Zealand, 1901," and from these reports it would appear to be quite reasonable to expect a recurrence of the Coalbrookdale coal, with a westerly dip under the plain, at a certain distance from the base of the hills upon which the mines are now working. It is a question whether it is a downthrow fault or if denudation has taken place. There is no data available to go upon, but the lessee proposes to settle the point by means of the diamond drill without delay. If he is successful, an asset of great importance will be added to the mineral wealth of New Zealand.

On the Grey Coalfield, between the upper branches of Coal Creek and the Ten-mile Creek, a large and valuable extension of the Grey Coalfield has been proved by Mr. James Bishop, M.Inst.M.E. This field contains workable seams of excellent bituminous coal, the exact area of which is as yet undetermined, but is included in the State Coal-mine Reserve situated between the Paparoa Range and the ocean. This coal and that which occurs in the Paparoa Company's lease adjoining have been erroneously classed as anthracitic. An analysis of fourteen samples of this coal supplied by Mr. Bishop was made at the Colonial Laboratory, Wellington, in April, 1907, the following being an average of the results obtained: Fixed carbon, 58·15 per cent.; hydrocarbons, volatile, 36·85 per cent.; water, 2·40 per cent.; ash, 3·56 per cent.; sulphur, 0·27 per cent. The evaporative power per pound of coal was 14·70.

The Brunner Mine.

The Brunner Colliery, near Greymouth, after thirty-six years' work, has ceased operations, being exhausted, having produced during this period 2,167,231 tons from 450 acres worked out. The thickness of the seam varied between 7 ft. and 11 ft., inclining at an angle of 14°, the coal (bituminous) having a specific gravity of 1·311; hence the total weight of coal in the area was about 6,641,725 tons, and the proportion extracted amounted to 32·6 per cent., which, considering the number of faults met with on the New Zealand coalfields, may be regarded as a high rate of extraction, that of the Buller Coalfield not being nearly so high, owing to faults, denudation, and to soft-coal areas. These figures may serve to form estimates for future guidance, as the Brunner Mine is the first large bituminous colliery to become exhausted, and upon which to base calculations. The percentage of extraction on the British coalfields was estimated by the Royal Coal Commission (England), 1899, to represent from 53 to 75 per cent.

The Westport Harbour.

This important harbour, designed by the late Sir John Coode, M.I.C.E., and constructed in its earlier stages under the engineering supervision of the late Mr. C. Napier Bell, M.I.C.E., has been workable at almost all states of the tide, the depths of water registered upon the bar ranging between 17 ft. and 26 ft. On only eight days during the year was the port unworkable.

The output of coal shipped during 1906 amounted to 607,608 tons.

The port is equipped to ship 20,000 tons per week when required. With the new collieries at present being opened up, and the increasing productiveness of those at work, annually increasing shipments from Westport are assured.

I have, &c.,

Frank Reed,

Inspecting Engineer of Mines.

APPENDIX A.

INSPECTORS' REPORTS.

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

SIR,— Inspector of Mines' Office, Thames, 25th February, 1907.

In compliance with section 75 of "The Coal-mines Act, 1905," I have the honour to transmit the following report on the coal-mines in the Northern District for the year ended 31st December, 1906 :—

Kawakawa (Samuel Neill, manager).—There was no work done in this mine for some time after W. H. Culley relinquished the lease; but in the early part of the year Messrs. Hall and Black took it over, and, like the previous lessee, their attention has been directed to taking out the small pillars left on the outcrop of Moody's old workings, and prospecting over their lease of 70 acres. They inform me that about 1,000 ft. of boring has been done, the deepest bore reaching to a depth of 80 ft., where the seam of coal was found to be 6 ft. 1 in. in thickness. This is most encouraging, and will probably lead to a profitable area of coal being discovered. An average of three men have been employed since the present party has held the lease, and the output for the year was 275 tons.

Hikurangi Coal Company (Limited) (Moody, T. P.).—The company's operations are chiefly confined to the extension and development of the coal-area on the western side of the railway, between Waro Station and West Bryan's old coal-mine, a portion being worked under the limestone rocks. These rocks present an attractive appearance, and are greatly admired by people passing to and fro on the railway. The prospects of the seam extending in this direction are most reassuring, on account of the thickness and good quality of the coal being maintained throughout. Owing to the swampy nature of the country on the surface, a large quantity of water has found its way into those workings during the period of the floods, thereby entailing a considerable outlay and cost in pumping the water out, causing also an inconvenience by the stoppage of the various faces, and reducing the output, which is urgently required to supply the demand. The company is installing another pump in order to cope with any sudden influx of water, thus preventing the flooding of the workings in future. A fair supply of coal is still obtained from the pillars worked on the eastern side of the railway, and great care is taken in the extraction of the pillars, consequently only a small amount of coal is lost. The workings, when inspected from time to time, have always been found to be carried forward in an efficient and careful manner, and with there being very little cover over the coal the ventilation has been all that could be desired. The output of coal for the year was 52,709 tons, an increase of 2,399 tons as compared with the previous year. An average of seventy men were employed. Dividends paid by the company for the year amounted to £1,875.

The Northern Coal Company (Limited) (W. R. Dunn, manager).—This company's operations are still directed to the development of their coal-area in a north-easterly direction from the top of the self-acting incline. As the work proceeds the seam continues to maintain its uniform thickness and quality. An improvement is being made in the main haulage road, commencing at the entrance of the tunnel and extending in toward the face. This has been enlarged to a height and width of 6 ft. by 9 ft., and carried in a straight line and graded to a very slight incline, which will enable a double line of rails to be laid down, and give better facilities for getting the coal out of the mine. During the year the mine was inspected three times, and on each occasion the workings were found to be carried forward satisfactorily to all concerned, whilst the ventilation was also good. The output of coal was 46,710 tons, an increase of 8,977 tons as compared with the previous year. Sixty-five men were employed, and dividends to the amount of £2,373 16s. were paid by the company during the year.

The Ngunguru and Kiripaka Mines (E. W. Tattley, manager).—These mines are now owned by the Northern Coal Company (Limited), and are run under the last named. The operations are confined to the Kiripaka section, where a large area of excellent coal is being operated on, below the bed of the river. The seam averages 16 ft. in thickness, and the main dip is down a depth of 600 ft., from which two levels have been opened out. In the early part of the year the company decided to erect a plant capable of raising from 250 to 300 tons a day, and with this object in view a light tram-line was constructed a distance of two miles and a quarter, and a 10 ton locomotive put on to take the trucks from the mine to the wharf, where boats can lay alongside and load, thus doing away with the old method of loading with punts and frequent stoppages caused by the small tides and freshes in the river. By this means a considerable saving is effected, and a more regular supply of coal is put on the market. A boiler with a working-pressure of 120 lb. has been installed to drive a Waddel fan to ventilate the mine and also to drive the light machinery in the workshop. A Helical hoisting-engine with 10 in. by 16 in. cylinders is now being put in position. The workings and appliances as inspected from time to time were found to be safe, but the ventilation in the early part of the year was not as good as could be desired, but since the erection of the fan there is no further cause for complaint as regards the air. The output of coal was 28,617 tons, an increase of 9,026 tons over the previous year. An average of forty-nine men were employed.

Union Collieries (F. J. Tattley, manager).—The work in this company's mine has been principally directed to the extension of the headings and the bords, from which a fair supply of marketable coal has been obtained. As the plant was sufficient for all requirements for the time, no important alterations have been made beyond carrying the working-faces forward to get sufficient coal to supply the

demand; but as the mine is well opened, a much larger quantity of coal could easily be raised if it were required. The coal having to be conveyed in barges from the mine to the railway, a distance of ten miles, and with the extra handling increases the cost of the coal by the time it is placed in the wagons, therefore it places the company at a disadvantage as compared with some other mines. When inspecting the mine, the workings and the equipments necessary for the raising and the conveying the coal to the railway were found to be safe and in an efficient state of repair. The ventilation was fairly good; but another shaft is to be sunk to connect with the workings for an outlet, and this will also improve the ventilation. The output of coal was 19,928 tons, an increase of 3,934 tons. Thirty-four men were employed.

Taupiri Coal-mines (Limited) (E. S. Wight, manager).—Ralph's section: During the past twelve months the main dip and headings have been extended in the direction of the newly acquired lease of coal under Lake Wahi. This work is being extended with reasonable despatch; but owing to the uneven nature of the floor a large amount of expense has been incurred by straightening the main dip in order to get a uniform grade, as this will be the future main haulage-road. The work has been carried out with very great care, and when finished will give increased facilities in bringing the coal to the shaft. The greater part of the haulage is done by the endless-rope system, which works very well, and is a great saving when contrasted with the means previously used. The portion of the seam worked varies from 7 ft. to 20 ft. in height. The coal is of a very fine quality, and when broken out with ordinary care only a limited amount of small coal is produced on account of its hardness, therefore the cost is minimum. The mine has been inspected frequently, and although there has been a number of minor accidents in the shape of men receiving cuts and bruises, yet there have been no serious accidents, and, as far as the working is concerned, there has been little cause for complaint. A fan is used for the purpose of ventilating the mine, and when driven at an ordinary rate of speed is capable of causing a larger inrush of air than is required by the Coal-mines Act. The screening plant is working very satisfactorily, and has been a great saving by enabling the company to classify and deliver the coal into the railway-wagons at less cost than hitherto, and gives more satisfaction to consumers. The output of coal for the year from this section totalled 88,856 tons, and 159 men were employed.

The extended section: Some extensive improvements have been effected during the year, and with the completion of the screening plant, the erection of a new and first-class ventilation fan, a "Sirocco" 50 in. diameter and driven by a 54-horse power compound steam-engine, the extension of the main-dip headings, and other development-work, this section of the company's mine may be considered a valuable property. For the year an average of ninety-three men were employed and 57,500 tons of coal produced. This is no mean output, but with the improved facilities a greater quantity could be delivered if required. The ventilation is good; the fan is causing 35,500 cubic feet of air to circulate through the workings, and with a slight improvement in the airways a much larger volume may be circulated. An endless-rope haulage system was installed at this mine, driven by a pair of engines, 12 in. diameter, 30 in. stroke, placed on the surface, connected with the mine by means of boreholes lined with iron pipes, through which the rope passes.

Taupiri Reserve: It appears that this section of the company's mine is kept as a reserve, so that in the event of an increased demand for coal the company has this section to draw upon. The mine has been kept open and drained throughout the year, and an average of eleven men employed in keeping the workings and machinery in good order and producing 6,158 tons of coal, which is a sufficient quantity to comply with the terms of the lease. The coal is of a good quality, and there is yet a large amount in sight. The mine when visited was found to be in good order, with a sufficient volume of air passing through the workings. The total output for the year for the Taupiri coal-mines was 152,588 tons, being an increase of 33,967 over the preceding year, whilst dividends to the extent of £6,375 were paid.

Drury Colliery, Drury (J. Holden, manager).—The work carried on in this mine during the past twelve months has only been very little, as the company decided to combine brickmaking, &c., on the mine with a view to making the mine a success; and as kilns had to be constructed, and machinery placed in position for this purpose, the men have been chiefly employed at the brickworks. The coal is of a poor quality, and will not compete favourably on the market with coal from the other mines in the district, but no doubt a fair quantity will be used at their own kilns. The output was 595 tons, and four men were employed.

Taupiri South (J. Duncan, manager).—The company has done but little work in this mine. Their attention has been directed to that portion of the property near the top of the spur of the hill, where at one place opened out in the early part of the year 2,856 tons of coal was obtained; but as this place became exhausted another drive was put in the hill and 275 raised. Since then a good deal of prospecting-work has been carried out, but not with as favourable results as anticipated, and it is said the company are likely to stop operations for the present. Five men were employed.

Taupiri West Coal-mining Company (Limited) (R. McEwen, manager).—This is a new coal-mine, the property being situated on the western side of the Waikato River, and about a mile and a quarter from the Huntly Railway-station. The greater portion is on Crown lands held on lease from the Government, and includes coal under Lake Rotoiti and the larger part of that under Lake Wahi, altogether about 1,050 acres. A considerable amount of prospecting has been done by the original syndicate who first took it up in the shape of boring, and who discovered two different seams of coal, the top seam being 10 ft. thick and the main seam about 24 ft. The prospects met with being very satisfactorily, the shareholders determined to sink a shaft, which has reached a depth of 180 ft., where the seam was cut through and the coal found to be equal to the best local production. A small oil-engine was used for the hoisting of the stuff broken in the shaft and for baling the water out to the depth named; but the prospects were such as to encourage the directors to obtain modern winding and pumping machinery, and a powerful winding-engine and plant have been purchased, and are being

removed to the mine, where they are to be erected with all possible speed. As the land adjoining this property is held by persons who hold the freeholds, a little delay may be caused before arrangements can be made with them to allow a tram-line (aerial) or a tramway to be constructed over their land, but it is not expected that any obstacle will be placed in the way of accomplishing one of those things to connect with the Government railway at Huntly, and when completed will to all appearances prove a profitable concern. Eight men were employed.

Mangapapa (*Mokau Coal-mine*) (William Lennox, manager).—There is little new to report from this mine, as the work carried on during the year has been confined to extending the various bords and headings to get sufficient coal to supply the demand, which is only very limited, owing to the great disadvantages in the transport of the coal from the mine to Waitara and New Plymouth. The steamboats which run up to the mine can only carry from 40 to 60 tons coal, and seldom exceed two trips in the week, as they have to be run to suit the tides, and one steamboat is sufficient for present requirements. The output of coal was 4,244 tons, a slight increase of 491 tons as compared with the previous year. When last inspected the workings were safe, but the ventilation was not as good as could be desired, and it was pointed out to the manager that another shaft should be sunk. When this is done a more regular supply of fresh air will be circulated in the mine. From ten to fourteen men are employed.

The total number of days men who were injured in the Taupiri coal-mines were off work and received the usual weekly allowance through the Waikato Medical and Accident Society, Huntly, was 1,366 days, at 2s. 1d. = £142 5s. 10d.

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

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

SIR,— Inspector of Mines' Office, Westport, 28th March, 1907.

I have the honour, in compliance with section 75 of "The Coal-mines Act, 1905," to report as follows on the West Coast coal-mines for the year ending 31st December, 1906 :—

Enner Glynn Coal-mine.—There has been no further effort made on this property towards the discovery of coal.

Shakespeare Bay.—Prospecting for coal is now discontinued.

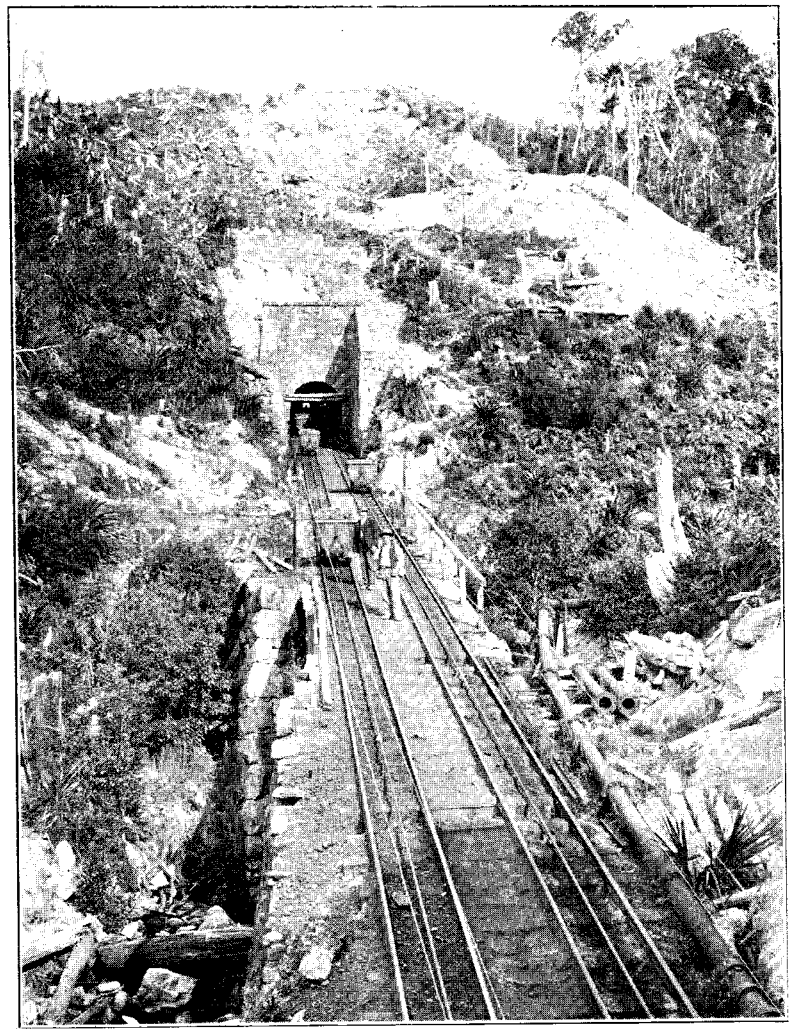
Golden Bay Coal-mine, Motupipi.—(1/11/1906) : During the year mining on this property has been practically at a standstill, with the exception of unwatering the dip-tunnel for the purpose of taking 10 tons of coal and 10 tons of fireclay, the latter for a bulk trial for clay goods.

Pakawau Coal-mine (owner, E. G. Pilcher, of Wellington; P. McCaffrey, mine-manager).—(27/10/1906) : Coal was taken from the dip-working until the 27th November, 1906, on which date mining was suspended and the pump withdrawn, pending completion of the low-level rock-tunnel, which was then driven 330 ft. Driving is continued on three shifts, and ventilation is well maintained and kept forward on the face with properly made canvas tubes. Reports kept to date. Plan of the dip-working was furnished up to date of suspension.

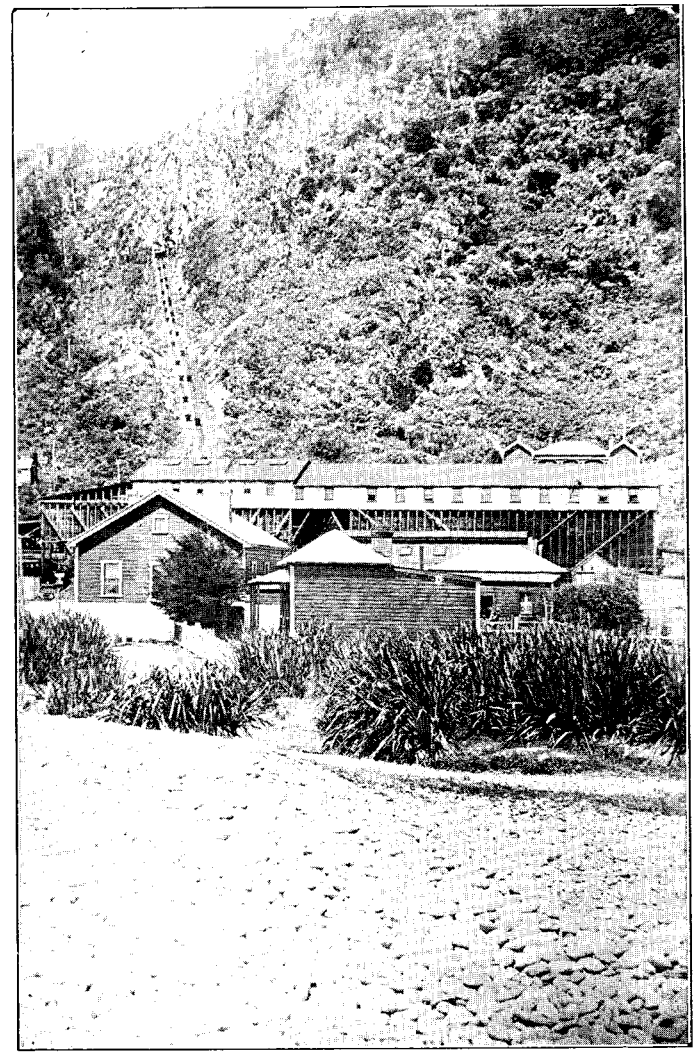
Puponga Colliery (owners, Puponga Coal and Gold Mining Company (Limited); Mr. Sydney George Hayward, attorney).—(26/10/1906) : Although mining operations have been steadily maintained during the year, output shows a decrease of 1,927 tons as compared with that of the previous year. Pending additional pumping-power, extension of the main-dip haulage-road was not continued further, development being confined to the eastern and western sections of working. On the eastern district working-conditions are well maintained, while quality and thickness of seam show no depreciation. In the beginning of the year the connections necessary to maintain free ventilation to the bottom levels were satisfactorily completed on the west district, and considerable attention directed to heighten and secure the upper levels preparatory to open out the face on long-wall system, extension of face necessitating the removal of several small pillars. When last visited, a compound pump of large capacity had arrived from Home, and was placed in temporary position, awaiting the arrival of pipe-line connections. Capacity for the storage of water is amply provided, and the drainage leading to the pump connected by a short underfoot rock-tunnel. Steaming-power is also efficiently supplied by the addition of a new 40-horse power multitubular boiler, now operative. Since the late improvements in connection with screening and washing the coal were completed, inquiry is more urgent for smaller sorts. Ventilation (fan) is efficient, and timber plentiful for all classes of work. General equipment in good order and reports to date. Arrangements to deepen the shipping channel have been completed, and dredging is now operative in forming a basin at the point of the jetty. On completion of this work, shipping movements should be greatly facilitated.

Mokihinui Colliery.—Since the management of the Seddonville State Colliery withdrew all movable plant, and securely fenced off all entrances to the mine-workings, further work has not been resumed. The burning section of the upper mine continues in a smouldering condition.

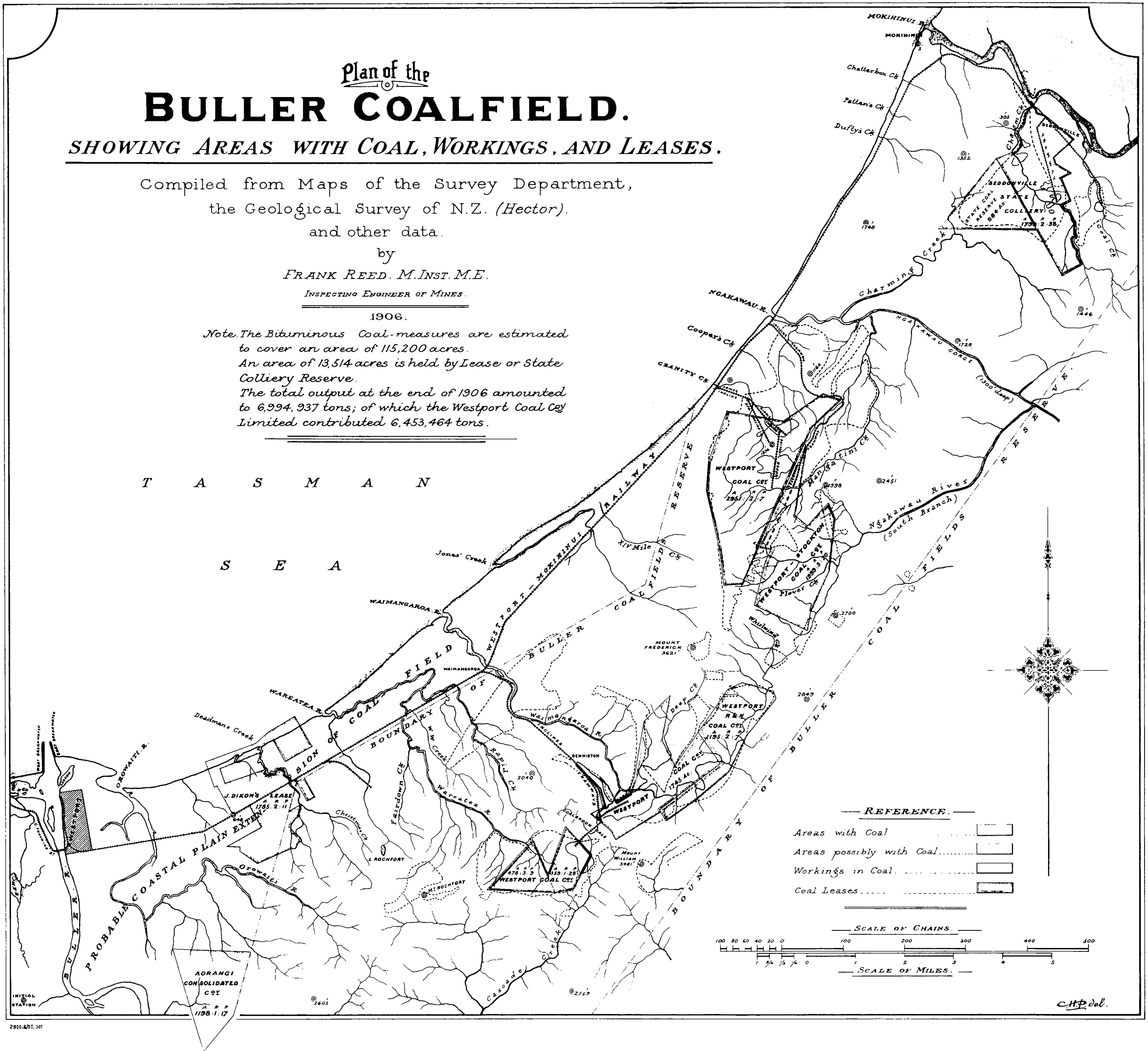
Westport-Stockton Coal Company (*Limited*).—Mr. George Broome, mining-engineer, under whose direction Mr. G. P. Robertson, of Christchurch, was appointed general surveyor and draftsman, work in this department being greatly facilitated by the engineer's former surveys and general knowledge of the property. Since charge was taken in December of 1905 development has been actively pushed, and the surveys completed in February enabled the contractors to commence driving A and B tunnels (coal) in the beginning of March. In laying out these continued series of drivings, which intersect the



WESTPORT COAL COMPANY (LIMITED): MILLERTON COLLIERY.
PORTION LOWER INCLINE.



WESTPORT COAL COMPANY (LIMITED): MILLERTON COLLIERY.
BINS AND SCREENS.


Plan of the
BULLER COALFIELD.
SHOWING AREAS WITH COAL, WORKINGS, AND LEASES.
Compiled from Maps of the Survey Department, the Geological Survey of N.Z. (Hector). and other data.
by
FRANK REED. M.INST.M.E.
INSPECTING ENGINEER OF MINES.
1906.
Note. The Bituminous Coal-measures are estimated to cover an area of 115,200 acres.
An area of 13,514 acres is held by Lease or State Colliery Reserve.
The total output at the end of 1906 amounted to 6,994,937 tons; of which the Westport Coal Coy Limited contributed 6,453,464 tons.
TASMAN
SEA
MOKIHINUI R.
MOKIHINUI
Chatterbox Ck
Pattan's Ck
Duffy's Ck
SEDDONVILLE
SEDDONVILLE STATE COLLIERY
STATE COAL RESERVE
Coal Ck
Charming Creek
NGAKAWAU R.
NGAKAWAU GORGE
(1300 deep)
Cooper's Ck
GRANITY CK
WESTPORT COAL COY
Mangatini Ck
WESTPORT-STOCKTON COAL COY
Plover Ck
Whirlwind Ck
Ngakawau River (South Branch)
WESTPORT-MOKIHINUI RAILWAY
RESERVE
COAL FIELDS RESERVE
BOUNDARY OF BULLER COAL FIELDS RESERVE
XIV Mile Ck
Jones' Creek
WAIMANGAROA R.
MOUNT FREDERICK 3621'
BOUNDARY OF BULLER COAL FIELD
WAIMANGAROA
WAREATEA R.
Deadman's Creek
PROBABLE COASTAL PLAIN EXTENSION OF COAL FIELD
J. DIXON'S LEASE
OROWAITI R.
Orowaiti R.
Christmas Ck
Fairdown Ck
Rapid Ck
Wareatea R.
Waimangaroa R.
DENNISTON
WESTPORT
WESTPORT R&N COAL COY
Deep Ck
MOUNT WILLIAM 3481'
L. ROCHFORT
MT ROCHFORT
WESTPORT COAL COY
Cascade Creek
BULLER R.
WESTPORT
AORANGI CONSOLIDATED COY
1198:1:17
INITIAL STATION
REFERENCE.
Areas with Coal
Areas possibly with Coal
Workings in Coal
Coal Leases
SCALE OF CHAINS
100 80 60 40 20 0 100 200 300 400 500
SCALE OF MILES.
1 3/4 1/2 1/4 0 1 2 3 4 5
CHP del.

2900.6/07.307

whole coal-bearing country, special care was taken to keep the various tunnels, named A, B, C, and D, in one continuous course, which, when completed, will cover a total distance of 171·5 chains, work being continuous by three shifts of workmen, Sundays and holidays excepted. A tunnel, 14·5 chains, was completed in September. B tunnel, driven 38 chains on the north end and 8 chains on the south end, leaving 19 chains yet to complete on Mangatini Creek. C tunnel intersects the coal-basin between Mangatini Creek and Ford Creek, a total distance of 36 chains, of which 16 chains are driven. D tunnel is driven but a few chains, and meanwhile awaits ventilating plant when available from the other drivings, when the proposal is to extend the tunnel to the boundary of the lease, a distance of 66 chains, before starting to open out and market the coal, in order that the "instroke method" of working may be adopted. The principal advantages claimed for this method are—(1) Greater safety and yield of round coal in extraction of pillars, as directly the bords are driven the pillars are removed, instead of standing for years to support the roof, which causes general deterioration.; (2) reduced cost of maintenance, as the maintaining of roads through broken ground is avoided; (3) danger from spontaneous ignition is reduced to a minimum; (4) increased ability to maintain a steady output of uniform quality. The "instroke method" of exploitation, although well known and practised in the Old Country, is quite new to this colony, and should tend towards safe and economical extraction. Altogether, these coal-tunnels aggregate a driven distance of one mile, proving a large area of hard, bright coal of excellent quality, with an average thickness of 12 ft. Throughout the whole series the headings have been driven next to the hard solid roof, and it is notable that not a single set of timber has been required. The average gradient is 1 in 17 in favour of the load, the maximum gradient 1 in 10. As all works are heading riseward, natural drainage will be assured over the whole field. Ventilation has been efficiently induced throughout by means of No. 5 Sturtevant fans, driven by Tangye oil-engines of 2½-horse power each, exhausting through iron pipes of 12 in. diameter, kept well up to the face. In B tunnel 34 chains were driven in this way until relieved by a 5-ft.-diameter shaft, sunk from the surface through 93 ft. of strong sandstone cover, the fan and engine being then removed to the shaft. From the mine-mouth to the bin-site at Ngakawau the total distance is about three miles and three-quarters, with a fall of 1,600 ft., and from the same point an electric tramway is being constructed to the brake-head at the top of the inclines. The length of this tramway is two and a quarter miles, with an average gradient in favour of the load of 1 in 21·2. One mile of this tramway is practically completed and contracts let for the remaining sections. From the brake-head to the bins the distance will be covered by two well-graded inclines, with an aggregate length of a mile and a half, having a fall of 1,037 ft. The upper incline, 40 chains in length, has an average gradient of 1 in 6·7; maximum gradient, 1 in 5; the lower incline average gradient, 1 in 4; maximum gradient, 1 in 3. The lower incline is nearing completion, and on the upper work is well advanced. Both inclines are to be worked on endless-rope system of haulage, and the motion regulated by two separately installed four-cylinder hydraulic brakes. To connect the traffic from the lower incline at Mine Creek with the screening and loading plant on the railway-siding at Ngakawau a rock-tunnel, 28 chains in length, is now being driven from both ends by three shifts of workmen, on a gradient of 1 in 63 in favour of the load. Of this work 16 chains are completed, while 12 chains are yet required to pierce the ridge. Traffic on this section of way will be conducted by electric locomotive haulage. The company proposes to construct extensive siding accommodation at Ngakawau, equipped with up-to-date screening and handling plant, with storage-capacity of 5,000 tons; also to erect a central electric-power station to supply current for the whole mine and works, the electric power to be employed for coal-cutting, haulage, ventilation, lighting, and other purposes. Tenders are invited for the whole plant required.

Millerton Colliery (owners, Westport Coal Company (Limited); Mr. George Fletcher, mining-manager).—(15/11/1906): In comparing the commercial demands on the colliery against those of the preceding year, the gross tonnage sold—266,529 tons—was an increase of 27,684 tons, and, in addition to the figures stated, 3,701 tons were consumed as fuel at the mine. Development and general equipment continue to be efficiently maintained.

East Dip section: Respecting the efficiency and safety of this sealed-off district, the walls are examined daily, and proper tests taken of the pent-up gases.

Mine Creek area continues to be the chief centre of production, hardness and quality of seam showing no depreciation. Apart from the ordinary routine of operations in connection with the solid working and removal of pillars, fresh development affords little subject-matter of special importance; ventilation, timbering, and free drainage are strictly observed as leading factors of safety and economy. In October last the main south heading was successfully holed on the Mangatini Creek Gorge, with the object of winning the major portion of the coalfield on the eastern side of this deep ravine, the bridging of which will necessarily entail considerable labour and expenditure.

New Tunnel area: Driving is actively pushed from the main west heading to effect permanent connection and prove an approximate area of 23 acres, located between the Mine Creek workings and the haulage terminal of this area. So far quality of coal is satisfactory.

New works completed during the year comprise the construction and completion of two dams for the conservation of water at Millerton, together with the necessary pipe-line connections suitable to meet the increased power required in driving the newly installed travelling belts in connection with the sorting and loading station at Granity. At the power-stations located at Mine Creek and the lower mine-mouth, further additions of machinery are unimportant, the ventilating-fans continuing to maintain their high efficiency.

Reports and all provisions of the Act are strictly observed. Throughout the year the reports made by the Inspectors on behalf of the Miners' Union have been highly satisfactory. No serious accidents reported, neither was heating or gas found in the disused areas.

Denniston Colliery (owners, Westport Coal Company (Limited); Mr. J. Dixon, mining-manager).—Commencing the year 1906, the output was maintained by single shift until May, after which period the Ironbridge Mine was worked double shift during the remainder of the year, output showing 49,286

tons in excess of that of the preceding year; the quantity of coal lowered down the company's inclines for shipment amounted to 310,000 tons. Generally, the mines continue to develop satisfactorily, while the development effected confirms the fact that the present productive capacity will continue well into the future.

Coalbrookdale Mine.—(22/11/1906): Throughout the various working-districts of this mine a satisfactory standard of efficiency has been maintained, and extension continues to expose coal in fair quantity and quality. Endless-rope haulage having been extended into a central position of the Cascade Dip working, hauling operations are thereby much simplified. In the early part of the year fire, the result of spontaneous heating, was discovered in an incipient stage in the West Cascade section of pillar-working, but the prompt and effective measures taken to fill away and send out all heated *débris* from the mine, further danger was avoided.

Munsie's section: In this section all the solid working that was deemed advisable to win from the present adit has been finished for some time, output being wholly maintained by the removal of the dip roadway pillars. However, in order to maintain the productiveness of the property, surveys have been completed preparatory to commencing the necessary rock-tunnelling operations in connection with the future development of the Whareatea lease. Owing to scarcity of labour, certain proposed works have been much retarded during the year.

Ironbridge Mine.—(23/11/1906): The development of Dundee Dip section has not proved a success, the seam being interrupted by a number of small faults, which hamper the work and affect the cost of production; but it is worthy of note, the normal thickness of seam is showing more favourably in the direction of Mount William.

Kiwi section, situated on the north bank of the Waimangaroa River, continues to yield a fair proportion of the output, the quality and thickness of seam being well maintained.

Old shaft-workings: The prospecting-work so far carried out has proved an important additional area of first-class workable coal, with a thickness of 14 ft., which in future operations will form a strong factor towards the productive capacities of the Ironbridge Mine.

Deep Creek area: In connection with the development of this section of the coalfield, the intended haulage-road, which junctions with the main underground haulage, has been driven out to the Waimangaroa River, where preparatory work is in progress towards the erection of a girder bridge; but before the coal-outcrops are reached a further extension of rock-tunnel will be driven, and Deep Creek bridged. As an evidence of the advanced condition of exploration-works, an increased percentage of the total output was won from solid working, thus showing that the pillared areas are closely followed up.

New works: Haulage system—The main haulage system leading from the Wooden Bridge, Burnett's Face, to the brake-head, Denniston, a distance of 120 chains, is now controlled by a newly erected steam-driven double-cylinder haulage-engine, the constant power exerted being a dead pull of 40 tons. The new storage-bins erected at the brake-head, with a calculated capacity of over 2,000 tons, are now equipped to clean, grade, and load the coal into railway-wagons.

The records kept at the respective mines of shots fired show a total of 46,191 shots, giving an average of 6·89 tons of coal produced per shot.

Working-conditions have maintained their former efficiency in ventilation and timbering, together with the requirements of the Coal-mines Act.

Coal Creek Coal-mine, Buller Road (George Walker, lessee).—(19/12/1906): All operations are suspended. Entrance to the mine was partly blocked by a fall of loose earth, which formed a partial dam against the mine-water.

White Cliffs Coal-mine, Buller Road (Job Lines, lessee).—(19/12/1906): The limited supply of coal is confined to dredge requirements, the coal being chiefly taken from the extraction of pillars.

Flaxbush Coal-mine, Three Channel Flat (De Filippi, owner).—(18/12/1906): The supply of coal is still confined to the Mokoia and Feddersen dredges. Working-conditions are in good order, and timber freely used to secure the exhausted ground.

Bourke's Creek Coal-mine (owners, Cairns and McLiver).—(14/12/1906): Operations at this mine are somewhat limited, as the coal formerly worked on the terrace lands has failed to show any signs of improvement, either in hardness or quality. However, in order to acquire a better share of local trade, the party is actively engaged in constructing a roadway to develop a 6 ft. seam of better quality.

Lockington's Leasehold, Bourke's Creek, Reefton.—(14/12/1906): Operations were suspended the whole year. The coal-seam is practically valueless, with excessive pyritic stone. Plant and working-conditions are in good order.

Archer's Freehold, Capleston (F. W. Archer, owner).—(14/12/1906): The removal of pillars in the No. 2 tunnel continues to be the chief source of supply. However, as this section of pillar-working is nearing exhaustion, rock-tunnelling was commenced to win the bottom seam. On a later visit the seam was struck, showing coal of excellent quality and hardness.

Coghlan's Freehold, Capleston (J. Coghlan, owner).—(14/12/1906): The supply of coal continues to be taken from the rise mine. Considerable work has been done to exploit the seam on lower levels, but the prospects are not favourable towards further expenditure.

Waitahu Coal-mine, Reefton (J. O'Donnell, owner).—(14/12/1906): With the severe faulting met with in No. 1 section, together with the continued soft character of the coal riseward, operations were suspended and attention directed to develop a 6 ft. seam on a lower level. In opening out this seam, hardness was a marked feature until change of conditions was effected by a "thinning" and soft fireclay roof, which requires close timbering. For household purposes the coal is excellent, but cost of working is much increased by the high percentage of small coal.

Reefton Coal Company (John Harris and party).—(13/12/1906): Coal is taken from two rise levels on No. 2 section, but the pyritic-stone bars maintain a strong and formidable position in the seam.

In view, however, of producing a more suitable coal for household and general requirements, No. 3 rock-tunnel has been reopened, and driving continued to win the seam on lower levels. The tunnel is securely timbered.

Murray Creek Coal-mine (J. Billet, owner).—(17/12/1906): Open face—The stripping is sluiced off and kept well in advance of the face. The supply of coal is chiefly used for steaming purposes at the Golden Fleece battery and Energetic Mine.

Phœnix Coal-mine, Reefton (John Knight, owner).—(27/12/1906): This elevated coal lease of 15 acres, situated near the head of Murray Creek, contains two coal-seams of excellent quality, with an average thickness of 20 ft. each, and angle of inclination 1 in 3. The seams are parted riseward by a thin clay band, which thickens dipward. The coal-seam, which has the reputation of a first-class article, is easy of access. Coal has been obtained therefrom during the last thirty years, consequently the lease is practically riddled with old drives. About eleven years ago a central section of working was lost by creep, and never again reopened, and during the heavy floods in June of 1905 the thin and broken overburden finally crushed down the whole of the working and pillar areas, with the subsequent result that a large section of the road leading to the Inglewood Mine subsided. This movement of the underlying strata seems to have continued, and on the 26th December spontaneous fire suddenly burst through the fallen ground. Under my supervision, between the 27th and 31st December, three formidable fires were encountered and subdued; but later on smoke has commenced to show through the surface over the old creep-working. The party having spent considerable time and labour in suppressing the open fires, a subsidy to the extent of £1 for £1 up to £50 has been granted to divertt a small creek over the lease. Coal-mining on the property is meantime suspended.

Lankey's Creek Coal-mine, Reefton (owners, Pascoe and Watson).—(13/12/1906): Since this party was reconstructed development is more promising, particularly in connection with the surface works. The tramway connecting the mine with the surface incline has been thoroughly overhauled and relaid with steel rails. The brake arrangements are rebuilt, and useful improvements made on the incline. Thickness and quality of seam are well maintained on the western section of the lease, and a heading is now in progress to connect with an open section of old working, which will further extend and facilitate operations.

New Inkerman Coal-mine.—All operations here are abandoned.

Devil's Creek Coal-mine, Reefton.—Since last report there has been nothing further done on this property.

Progress New Coal-mine, Reefton.—(17/12/1906): Since the present section of working was opened by the new rock-tunnel, coal-getting has been much simplified, and ventilation is well maintained through the various openings on the outcrop. Timber is freely used where required, and the general workings are in good order. The coal is exclusively used at the Progress Mines.

Loughnan's Coal-mine, Reefton.—This property changed hands during the year, and under the new ownership was shut down.

Blackball Colliery (owners, Blackball Coal Company (Limited).—(11/12/1906): Operations are continued on single shift, the output showing an increase of 8,974 tons against that of the preceding year. Underground and surface development are unimportant. The recent equipment of endless-rope haulage, free drainage, and mechanical ventilation are in every respect efficient to meet all present and future requirements necessary to exhaust the newly opened section of dip-working. During the working-out of the rise areas, which extended over a considerable number of years, spontaneous combustion has been a continuous source of danger, causing a ruinous expenditure in the working of the property; but on exhaustion of these areas in March, 1906, precautionary steps were taken whereby all connections between the rise and dip workings were effectively sealed off by the construction of three strongly built brick and cement dams, capable of raising the mine-water over the whole heated areas: thus safety is assured against any possible spread of fire extending from the exhausted ground. Guided by the experience gained in the exhaustion of the rise areas by the ordinary bord-and-pillar work, the management has decided to exhaust the dip areas by the more improved "panel system," the system of ventilation installed being highly suitable and effective to sweep off any resultant gases that may occur through the outbreak of fire in any one panel directly into the main return airway without risk to life or property. In blocking out the field the panels have each a measured area of 200 yards by 150 yards, the panel being exhausted in the first working and accordingly sealed off. Apart from the more direct action in dealing with the exhausted ground, the working economy claimed is—full advantage gained in the first timbering, a higher percentage of round coal, with largely improved working-conditions, and minimum of risk. Regarding the development of this district of dip-working, the field is opened westerly by two main levels, driven in parallel lines from the bottom of the dip rock tunnel for a distance of 61 chains, the seam still continuing to maintain coal of excellent quality. Rising from the main haulage road, the winning headings which intersect the field and connect the intake and return airways are firstly holed and completed for free ventilation before the ordinary work of getting coal is commenced. Hence, all smoke from explosives and other gaseous impurities are swept directly into the return from each separately ventilated district. On the whole, working-conditions are simple and well regulated. The provisions of the Act are strictly enforced, and all reports kept to date. Average ventilation by Capell fan, 50,000 cubic feet per minute, circulating over a total of seventy-nine men employed underground. Mean velocity of air-current in fan-drift, 926 ft. per minute. No serious accidents reported.

The Paparoa Coal-mining Company (Limited).—(7/1/1907): Mr. Ashley Hunter, C.E., kindly provides the following brief *résumé* of proposed works: The number of workmen actively engaged on this mine is 130, and the varied works actually in progress include bushfalling, the formation of railway-line, roads, and tracks on the property. These, together with the erection of suitable camp accommodation for the workmen, and certain preparatory works incidental to pushing on with the inclines and

tunnels, constitute the whole works in progress. The main features of the works embody the construction of a mile and a quarter of railway to join with the Government line (now under construction to Blackball), together with ample siding accommodation, the erection of coal-bins of about 5,000 tons capacity, 50 chains of incline on a rising gradient of 1 in 3, and a high-level rock-tunnel, of which length and gradient are not yet determined, the whole system to be constructed and equipped for endless-rope haulage. In addition to the work stated, prospecting is vigorously pushed, in order to expose and define the various coal-seams more fully than has been hitherto done. (Mine-manager, Mr. J. T. Watson, late Assistant Inspector of Coal-mines, New South Wales.)

Tyneside Proprietary Company (Mr. R. Alison, mining-manager).—(7/12/1906): To meet the pressing demands on the Brunner coal double shifting became an urgent necessity. Under these conditions output was well maintained, and although fresh developments were not important, the gross tonnage raised (61,547 tons) showed the substantial increase of 17,500 tons when compared with that of the preceding year. Working westward from the main haulage road, the whole line of face was compulsorily abandoned on the boundary of the River Grey, but not until ample provision was made for the circulation of free and reliable air-currents (without brattice) against any probable accumulations of gas. Pumping still continuing to be a formidable tax on the property, extension of the dip-working failed to make any further progress, and in consequence output is chiefly maintained from the upper levels on the eastern section of the field. Progress, however, is being made riseward, and a holing is early expected whereby ventilation will be induced from daylight direct on the working-face. Fortunately, the urgency of increased pumping-power has been seriously considered. A plant of large capacity has just arrived from Home. The screening, sorting, and storage of coal has received further attention, and demands on the colliery are more urgent for all classes of coal. Monthly inspections are regularly made by the workmen in accordance with the Act, and the reports are honest and truthful records. William Morris (jun.) was killed in the face by a falling prop. Reports to date, and seven inspections made.

Brunner Mine (Mr. R. Alison, mining-manager).—(7/12/1906): The history of this old-established and notable mine commenced in the year 1870, and terminated by its total exhaustion and abandonment on the 22nd December, 1906. During the period stated the gross tonnage raised was approximately 2,167,231 tons, and, as taken from the colliery-plan, the exhausted and proved barren areas of the coal lease may be roughly estimated at 450 acres. In the matter of exhaustion, the coal-seam was practically worked to daylight, with the exception of a few standing pillars to support a certain section of the elevated terraces, so that the Mines Department and colliery management are fairly assured against any argument that may in future be raised on the matter of partial exhaustion. At the coke- and brick-making industries change of output is not likely to occur for several years to come, as raw clay is well provided on stock, and coal for coking purposes will be supplied both from the St. Kilda Mine on the Brunner lease and the Tyneside Proprietary.

The St. Kilda section of the Brunner lease, located on the north bank of the Grey River and near the upper end of the Brunner Gorge, was firstly opened by Mr. Martin Kennedy, and after a short period of prospecting operations was subsequently abandoned. The existing company, however, has recently opened the mine and carried out some useful developments, which have provided employment for a goodly number of resident miners formerly employed in the old mine. Coal of suitable quality is thus supplied for the manufacture of coke, the properties of the coal being soft and free from earthy impurities. As a means of conveyance from the mine, the original horse tram-line was reconstructed, and a shoot erected near the coke ovens for the delivery of the coal.

Fleming's Coal-lease, Stillwater.—On commencing mining operations, this lease was opened by a rock-tunnel, 6 ft. by 5 ft., driven in the terrace which forms the western boundary of the Stillwater Valley, and at a point about 100 yards from the Midland Railway. The total drivings as shown by colliery-plan are as follows: Rock drivings, 919 ft.; coal drivings, 252 ft.; sinking and raising on coal, 120 ft.: total, 1,291 ft. The average thickness of coal-seam may be taken as 2 ft. 4 in.; quality, soft; angle of inclination, 1 in 1 nearly; and at a depth of 66 ft. below the main level, thickness of seam was 2 ft.; practically valueless. To further extend development in the locality selected there certainly can be no hope of encouragement, as the geological features of the field are seriously against promise in that direction. Total coal raised for 1906 (from all work) was 130 tons. Operations were suspended on the 5th March, 1907, pending further instruction.

Nine-mile Beach.—This property, worked by John Kane, of Greymouth, was not visited.

Coal-miners' Accident Relief Fund, administered under the Coal-mines Act.

Where the funds are managed under medical associations the following table shows the contributions paid by the various coal companies, the balances credited at the Post-Office Savings-Bank, the amounts expended on accident allowance, and the increase on fund for the year 1906:—

Name of Colliery.	Contributions.	Balance in Savings-Bank.	Accident Allowance.	Increase.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Denniston	608 15 1	5,101 9 10	452 7 0	302 19 11
Millerton	525 8 5	2,120 13 8	439 12 4	147 9 11
Blackball	142 5 5	926 5 9	60 4 3	95 4 7
Brunner and Tyneside	199 12 6	1,010 16 9	128 12 11	73 0 5
Interest	245 9 2	...	...	...
Totals	1,721 10 7	9,159 6 0	1,080 16 6	618 14 10

The contributions paid by the colliery-owners to the Coal-miners' Accident Relief Fund, under the Public Trust Account, was £467 14s. 10d., while payments made towards accident relief amounted to £308 4s. 6d., leaving a balance of £159 10s. 4d.

Accidents.

Of the number of accidents reported as coming within the meaning of section 60 of "The Coal-mines Act, 1905," three were fatal and twelve non-fatal. Of the persons killed, two were underground at or near the working-face, and the other was a miner who fell over a cliff at Denniston while returning from his work at midnight.

Fatal.

Denniston Colliery.—(27/7/1906): Alfred Archer, miner, killed by fall of stone about 9 yards from the face while taking loaded truck down incline.

Tyneside Colliery.—(27/9/1906): William John Morris, miner, killed by falling prop in the face.

Denniston Colliery.—(24/10/1906): James Wilson, miner, killed by accidentally falling over a cliff while returning from work.

Non-Fatal.

Seddonville Colliery.—(5/2/1906): John Harris, miner, sustained fracture of small bone of right leg while escaping from small fall of soft side coal.

Millerton Colliery.—(19/5/1906): Charles Sibree, miner, had chest injured by falling off ladder in the face.

Point Elizabeth Colliery.—(19/5/1906): Andrew O'Neil, miner, sustained fracture of right leg and slight injury to head, escaping from small fall of stone while working in a pillar face.

Denniston Colliery.—(15/6/1906): C. Peterson, trucker, sustained fracture of leg by runaway empties striking full box which he was trucking.

Millerton Colliery.—(5/7/1906): Charles Lewis, miner, sustained injury to back and knee by fall of roof coal while setting timber.

Millerton Colliery.—(3/7/1906): Charles Grey, timberman, slipped on flatsheet while carrying a prop, and sustained severe strain.

Millerton Colliery.—(10/7/1906): James Young, rope-road worker, slipped on rail and had left side and head injured by full truck.

Millerton Colliery.—(16/8/1906): Frederick Smith, machine apprentice, had ribs and legs bruised by fall of coal in the face.

Point Elizabeth Colliery.—(17/10/1906): James Kyle, trucker, sustained compound fracture of left leg by falling between two trucks in No. 1 tunnel district.

Point Elizabeth Colliery.—(30/10/1906): Robert Wilson, miner, sustained injury to back by piece of coal slipping from cutting side while he was kneeling in working-face.

Point Elizabeth Colliery.—(5/11/1906): John Kershaw, trucker, had ribs injured by runaway truck.

Millerton Colliery.—(17/12/1906): David McKenzie, miner, sustained injury to left side and arm by hanging shot coming away and smashing him against prop.

Prosecutions.

Denniston Colliery.—(22/5/1906): Warden's Court, Westport. Proceedings were instituted against a trucker employed at Ironbridge Mine for breach of Special Rules 30 and 33. Proved guilty of breach of Special Rule No. 30, and fined £3, with costs £2 9s.

Blackball Colliery.—(8/10/1906): At the Warden's Court, Greymouth, legal proceedings were instituted on one count affecting two persons employed at this colliery for breach of Special Rule No. 36. Both parties pleaded guilty. Fines and costs, £3 16s. each.

Millerton Colliery.—(17/10/1906): Warden's Court, Westport. Proceedings were instituted against a coal-cutting-machine man for breach of Special Rule No 36. Accused pleaded guilty, and was fined £1, with £1 8s. costs.

General Remarks.

Throughout the year the productive capacities of the West Coast collieries have maintained a steady and marked increase, the gross tonnage sold being 962,915 tons, as compared with 856,227 tons for the year 1905. The increase for the year 1906 was 106,688 tons, as against that of 19,277 tons for the preceding year.

New Leases.

Westport Naval Coal Company.—(Cooke's lease): According to notes received from Mr. R. Young, Westport, acting attorney for the company, working-capital to the amount of £100,000 has been subscribed in England. The surveys and plans in connection with the projected surface works are just completed. In addition to the £1,000 deposited on receipt of lease, local expenses in surveys, &c., was £840; London expenses, £500.

Foreign Trade.

Westport Coal Company.—The total tonnage shipped directly from Westport to ports outside the colony during the year 1906 was 33,245 tons, this being a decrease of 1,524 tons as compared with 34,769 tons for the year 1905, and in comparison with the year 1904 a decrease of 11,074 tons.

I have, &c.,

R. Tennent,

Inspector of Mines.

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

SIR,— Office of Inspector of Mines (Southern District), Dunedin, 19th March, 1907.

I have the honour to submit the following report on the coal-mines in the Southern District for the year ending the 31st December, 1906, in fulfilment of the requirements of section 75 of "The Coal-mines Act, 1905":—

CANTERBURY.

Springfield Colliery, Springfield (J. Taylor, permit).—(4/12/1906): Operations at this mine are gradually decreasing. No output of fireclay during the year. Two men generally employed.

Springfield Fireclay Works, Springfield (lately Victoria Mine) (Luke Greening, mine-manager, permit).—(4/12/1906): This property, formerly known as Victoria Mine, was sold by W. J. Cloudesley to the above company. At the time of my visit the mine was idle, pending the completion of a new air-shaft, as the workings had been extended beyond the influence of the existing shaft. The pottery-works were in active operation.

Dalethorpe Coal-mine, Springfield (G. Rutherford, owner; P. Campbell, manager).—(4/12/1906): I learned on this visit that operations had been suspended.

Homebush Colliery, Glentunnel (J. C. Campbell, manager; Dean's trustees, owners).—(21/12/1906): South-going dip-workings are stopped meanwhile, and Nos. 1 and 2 heading-places continue to supply the bulk of output from this section. Ventilation is much improved since the furnace started. The new overcast for air-return from the north side will be another advantage when finished. It is estimated that the pillaring section to rise will last three years at present rate of output. The underviewer claims that less than 20 tons of coal have been lost in the pillars during the past twelve months. That close attention continues to be paid by officials to the false roof and safe timbering of working-places is evidenced by freedom from accident from that cause. The surface tramway from mine-mouth to railway is being straightened and graded to suit the light locomotive which is being imported to replace horse-haulage. Rules posted, plans kept, and report-books to date. 184 tons of fireclay were produced during the year for manufacture on the premises.

St. Helens Colliery, Whitecliffs (H. Levick, permit).—(21/12/1906): The old workings to rise are now exhausted. A new dip-drive and air-shaft are sunk on a 3 ft. seam of coal to the westward of all old workings.

Craigieburn Coal-mine, West Coast Road (D. Manson).—During the year 35 tons of coal mined for station and local requirements.

Snowdon Coal-mine, Rakaia Gorge (George Gerard).—Coal mined for station purposes and local requirements.

Kakahu Colliery, Geraldine (George Robertson, owner).—(8/12/1906): A small prospecting shaft has been sunk on the creek-bank in the coal-measures underlying the limestone formation. The 2 ft. seam is visible, but efforts to reach the 8 ft. seam said to underlie are not being prosecuted meanwhile.

Christchurch Lime Company, Staveley (R. L. Scott, secretary, Christchurch).—No work has been done in connection with the coal-seams on this property during the year.

Mount Somers Coal Company, Mount Somers (Andrew Thompson, mine-manager; George Nell, secretary).—(19/12/1906): Headings and levels are apparently up to boundaries on northern and western sides of the freehold. The manager suggests that new workings will be undertaken on Gibson's leasehold adjoining. Air good. Report-book to date. Seam known to be 30 ft. in thickness.

Woolshed Creek Colliery, Mount Somers (W. T. Doak, secretary; Thomas Harris, permit).—(19/12/1906): Underground workings are now being extended to northward, but the coal is stony and roof bad, to which timber is set where required. Air good. This company, as applicants for a coal lease over Crown lands adjoining and to northward of the Mount Somers Coal Company's freehold, if successful in securing the area, announce their intention of an extension of the county tramline up the valley of Chapman's Creek.

Albury Coal-mine, Chamberlain Settlement, Albury (G. H. Willetts, lessee and permit-holder).—(21/11/1906): Under new tenancy the mine is working steadily in supply of local requirements. Mr. Willetts concurred that the main level should be taken narrow under the creek-bed in order to avoid risk of falling roof letting the water into the mine. Seam, 10 ft.

Waihao Coal Syndicate, Waihao Forks (G. Lomas, permit).—(22/11/1906): Seam, 5 ft., having 2 ft. of shale interbedded. System of work, modified longwall. A prospecting shaft, 6 ft. 2 in. by 4 ft. in the clear, being sunk at about 20 chains from Waihao Forks Railway-station, is down 173 ft. in the green sands, at which point water was struck, necessitating steam winding and pumping appliances, which are now being furnished.

Elephant Hill, Waihao Downs (Lewis Mathias).—About 84 tons of coal have been taken from this pit during the year for station and local requirements.

Dalgety Coal-pit, Hakataramea (New Zealand and Australian Land Company, owners; J. Drysdale, manager).—A new mine has been opened further up the creek-bank, where the seam is semi-vertical and 30 ft. in thickness.

NORTH OTAGO.

Wharekuri Coal-pit, Wharekuri (A. Shanks).—(30/10/1906): The new drive is to some extent unfortunately situated in having struck the old workings, of which no plans are available. The work, however, is not all loss, as a certain percentage of coal left standing by former workers is recoverable. An uprise to surface for air-return is about to be started.

Cairns's Coal-area, Awakino, Kurow (W. B. Cairns, licensee).—(30/11/1906): Practically nothing has been done on this area since the license was granted.

Sanderson's Coal-mine (late Phillips's), Awakino, Kurow (John Sanderson, owner).—(30/11/1906): This mine having been acquired by Mr. Sanderson, the new owner has driven 50 yards in and 50 yards southerly along the strike of the semi-vertical coal-seam to a fault which was being proved. A prospecting shaft to south of present workings is down 30 ft.

Awakino Coal-mine, Kurow (George Orr, owner).—(30/11/1906): Not worked since March, 1905.

St. Andrew's Colliery, Papakaio (Thomas Nimmo, owner and manager).—(23/11/1906): A feature of the work in this mine is the safe manner in which pillars and head coal continue to be withdrawn without accident. Air good. Rules posted.

Prince Alfred Colliery, Papakaio (Mrs. J. E. Willetts, owner; William Russell, permit).—(23/11/1906): The 7 ft. seam of coal in the leasehold is practically exhausted. Timbering is well and safely done. A quantity of CO_2 being given off from the waste is led direct to the upcast air-shaft. A prospecting shaft being sunk on the freehold is down 40 ft. in the coal-measures.

Ngapara Colliery, Ngapara (William Nimmo, owner and manager).—(14/8/1906): Mine-workings in good order. Ventilation excellent. Seam, 25 ft. lignite and shale intermixed, having bands showing resinous and woody structure.

Allandale Colliery, Shag Point (C. H. Westfield, mine-manager; W. Everest, secretary, Shag Point).—(27/11/1906): North section: Coal having thinned down considerably, it was decided to cease advancing and come back on the pillars, which work is now proceeding. A prospecting bore at 58 ft. passed through a seam of coal 3 ft. 6 in. in thickness. Dip section: Development continues. The dip is at 280 yards to the face, and No. 2 north and south levels are broken away—the north level in top seam and south level in No. 2 seam. These seams are seen contiguous in several sections of the district, giving a total thickness of from 12 ft. to 14 ft. of coal where exposed. Ventilation satisfactory, and timbering of working-places systematically attended to, an abundant supply for the purpose being constantly maintained on the premises. Electric-power plant for dip-haulage, pumping, and lighting purposes having proved efficacious, additional electrical plant is on order for the purpose of working the 7 ft. seam to the dip at near foot of main-haulage incline. Rules posted. Report-books and plan to date.

Shag Point Colliery (old pit), Shag Point.—(2/5/1906): Buildings are taken down; engines, boilers, pumps, and all plant and machinery removed. Shafts are fenced around and covered with substantial beams. I had a quantity of old and damaged explosives removed from the magazine to a place of safety.

Shag Point Colliery, Shag Point (William Hunt, permit).—A land-sale trade is being done from the upper or 3 ft. seam on the hillside. Pillar-extraction continues.

South Otago.

Fernhill Coal Company, Abbotsford (James Gray, lessee and manager).—(14/11/1906): A section of the old workings has been opened and cleared of damp. Falls of roof and sand from above coal-seam make effective stoppings to fire area. Ventilation satisfactory.

Freeman's Coal Company, Abbotsford (R. Hill, manager).—(14/11/1906): The irregular method of development adopted is not conducive to free ventilation, with the result that while a fair supply of air enters the mine an unduly small proportion of the whole reaches a number of the working-faces. At my request improvements have been effected from time to time by closer attention to bratticing, and the ventilating furnace has been repaired and enlarged somewhat. It is, however, apparent that as airways and roadways lengthen the loss of air by leakage and drag is such that the requirements of the Coal-mines Act are becoming incapable of fulfilment under the existing system. Pillars are being successfully drawn in the dip area, and the line of fire stoppings is maintained. An air-door on the haulage-road was found burnt in half, but whether maliciously or accidentally set on fire has not been ascertained. The new coupled haulage-engine is working effectively. Report-books to date. Plan kept. Rules posted.

Jubilee Colliery, Saddle Hill (Peter Campbell, mine-manager).—(19/9/1906): A new air-shaft, 4 ft. 6 in. by 2 ft. 6 in., has been sunk a depth of 75 ft. to the coal-seam; hence the ventilation around the working-faces is considerably improved. The former air-course has been cut off, and the old workings have now a separate ventilating system. Twenty-eight men employed. The mine-workings and roadways are in good order. Powder-canisters provided. Rules posted. Report-book up to date. Plan kept.

Burnweil Colliery (including Glenochiel Colliery), Saddle Hill (Adam Harris, owner and manager).—(19/9/1906): Mr. Harris having acquired the adjoining Glenochiel Colliery property (so long owned and worked by Mr. Bryce), has recently directed his efforts in the latter direction. Hauling-engine and steam-boiler having been erected, a new dip is being driven easterly, which will command a reasonable area of coal-seam to the rise of the engine plane. Ventilation good, and brattice up to working-faces.

Saddle Hill No. 1 Colliery, Saddle Hill (Christie Bros., owners; W. W. Ogilvie, manager).—(9/10/1906): A brick furnace has been built to the new upcast air-shaft. Ventilation excellent, and air conducted by brattice to working-faces. Extension of main dip is being proceeded with. This mine is water-free, due to percolation of water-growth (which is considerable) into a seam of sand underlying the coal-seam, thus becoming a source of underground springs at lower altitudes. Seam 20 ft. in thickness, of which 8 ft. is being worked bord and pillar as first working.

Saddle Hill No. 2 Colliery, Saddle Hill (Christie Bros., owners; James C. Christie, manager).—(19/9/1906): Pillars continue to be successfully drawn in a safe manner, an ample supply of timber being kept up to the lip of the waste as required. Mr. Christie estimated that from 85 to 90 per cent. of the coal-seam is being recovered. It is worthy of notice that fifteen miners produced 21,000 tons

of coal from this mine during the year 1906. The total number of men underground, 17. Seam, 20 ft., all being worked.

Mosgiel Colliery, Mosgiel (Orr and party; Hugh Orr, manager).—(19/9/1906): Operations are being continued in the dip section of the mine. All work on south side is stopped on the boundary. Ventilation, fair. Mine-workings generally in good order. Six men employed. Rules posted. Report-book kept.

Lauriston Colliery, Duncan Settlement, Brighton Road (J. Walker, owner and manager).—About 250 tons of coal were raised from this mine during the year for local requirements. Three men employed.

McColl's Coal-pit, Duncan Settlement, Brighton (D. L. McColl).—Two men employed during the year raised 256 tons of coal for local requirements from this pit.

Drummuir Coal-mine, Brighton (A. Louden).—Coal mined for private use.

Fairbairn's Coal-mine, Taieri Mouth (R. Fairbairn, owner).—Coal mined for private use and local requirements.

Bruce Coal-mine, Milton (Anthony Young).—(18/10/1906): Mine idle meanwhile.

Reed's Coal-mine, Milton.—(18/10/1906): Mine idle meanwhile.

Real Mackay Colliery, Milton (Lovell's Flat Coal Company, owners; James Carruthers, mine-manager).—(18/10/1906): Driving to boundaries and robbing pillars homeward. Workings in good order and air excellent. A new mine is being driven to the 8 ft. seam which was found by boring.

The Bruce Railway and Coal Company, Milton (Thomas Barclay, mine-manager; R. Robertson, secretary).—(18/10/1906): Steam-haulage and pumping plant have been provided. Workings to dip are turning out well, coal being strong and improved in quality. Substantial brattice erected, and air fairly well conducted throughout the workings.

Adam's Flat Coal-mine, Adam's Flat (J. Reid, owner).—Opencast pit for supply of local requirements.

Wallsend Coal-mine, Lovell's Flat (R. Hewitson).—Opencast pit. 74 tons were taken out during the year for local requirements.

Benhar Coal-mine, Stirling (P. McSkimming and Son, owners; James McLeod, permit).—(12/12/1906): Nos. 2 and 3 seams are now being worked from the new dip drive to eastward. Shot-firing and blasting was in progress at the time of my visit, just prior to the miners ceasing work for the day.

Mount Wallace Coal-mine, Stirling (Francis Park, lessee, lately James Walls).—Mr. Park took over the proprietorship of this mine during the year, and a steady output has been maintained, about 540 tons being extracted.

Taratu Railway and Coal Company, Taratu Colliery, Kaitangata (Thomas Shore, mine-manager; G. R. Cheeseman, general manager).—(4/10/1906): All work is still confined to the upper seam. Working-places and roadways in good order. Timber well used. Ventilation good. There are now three air-returns, and a new one is being made to come out on the other side of the hill. The main level has been driven to the roof at 12 chains 22 links. A dip has now been driven 75 ft. at a grade of 1 in 5 and a start made to open up this section. The coal looks well in the dip section. An oil-engine is to be installed for pumping and winding. Mine idle on this date. Eighteen men employed. Report-books in order.

Kaitangata Colliery, Kaitangata.—(New Zealand Coal and Oil Company, owners; O. G. Lockhart, secretary, Dunedin; W. Carson, mine-manager).—(11/12/1906): At the commencement of the year Mr. Carson, mine-manager, Castle Hill Colliery, was appointed manager over both the company's mines at Kaitangata. In the month of April, signs of heating being apparent in No. 12 dip, the men were withdrawn from the two remaining pillars and the dip closed off. Development-work in the new main seam, south district, was continued during the early part of the year. No. 19 dip was driven 370 ft., the main south level extended, and Nos. 3 and 4 headings were put up several hundred feet and bords broken away. No. 18 dip workings were being freely robbed when a feeder of water with gas was experienced in No. 3 bord off No. 19 dip; the water rose and overflowed into No. 18 dip, which also became flooded. As extension of the main-seam workings progressed the circulation of air around working-faces became increasingly difficult, and during an extended period of unfavourable atmospheric conditions in the month of May exudation of gases became so pronounced that the ventilating system proved inadequate to sufficiently dilute the increased volume of gas being given off. This state continuing, the management decided in June to proceed with the sinking of a new air-shaft on the seaward side of the main range of hills as already surveyed to a site in advance of the new workings. The shaft, 7 ft. 6 in. by 5 ft. in the clear, was sunk 583 ft., and communication successfully made underground, thus cutting off a mile and a quarter of return airway, the major part of which had been driven and maintained through old workings. During the period of cessation of coal-winning pending sinking of new air-shaft, advantage was taken of the opportunity to effect necessary repairs to the main cross-measures haulage-road underground. Brick-wall fire-stoppings were repaired and strengthened, the brick arch at No. 3 reinforced with bent and shaped railway metals backed with 4 in. hardwood lagging. At intersections of Nos. 8, 9, and 16 districts—the coal-seams being practically worked out—continuous sets of bent rails having boiler-plate sheathing and sand backing have been inserted in the cross-sections of the coal-seams from rock to rock, which it is hoped will effectually act as airtight stoppings, imprison black damp, and prevent subsequent outbreak of fire by spontaneous ignition at those points. Unfortunately, several serious accidents happened to the mine officials while these improvements were being carried out. (25/7/1906): Neill McAllister, assistant manager, and Charles Milne, repairer, were severely burned about face, hands, and body by a small fall of heated sand which came away unexpectedly from near the roof at brick-wall fire-stopping undergoing repair at foot of main incline. (10/10/1906): John McCaughern and William Proctor, deputies, sustained burns of face and arms by slight ignition of firedamp at No. 8 crossing. For purpose of getting in to play water

on a small fire which had arisen they took brattice in, when a small quantity of gas which had accumulated near the roof came in contact with a flame from the fire. (8/11/1906): Frederick Olive Anderson, acting assistant manager, and William Lee, mechanical engineer, were missed during the morning, and their bodies were subsequently found in the return airway, which was heavily fouled by gases from a partially deluged spontaneous fire at No. 9, which latter, it is assumed, deceased went in to explore. (17/12/1906): James Hill, banksman, and David Coulter, miner, sustained burns of face, neck, and arms by an ignition of gas at top of new sinking air-shaft. Owing to unfavourable weather, ventilation was dull, and work in the shaft was suspended. Hill, Coulter, and a miner named Illingworth were engaged adjusting the plumb-lines, when Illingworth struck a match to light his pipe and caused the ignition. (5/2/1907): Alexander Bennie, miner, was fatally injured at No. 3 level, No. 18 dip, by a fall of coal from low roof, crushing deceased on the end of a box which he had just filled. A pillar "nug" occurred, and the coal, about 10 cwt., came suddenly away from a "sooty back." Deceased's brother and workmate stated that he had sounded the roof prior to the accident, and, although "drummy," he thought it safe.

Castle Hill Colliery, Kaitangata (New Zealand Coal and Oil Company, owners; W. Carson, mine-manager).—(12/12/1906): This mine has been unusually vigorously worked during the year on account of the difficulties encountered at the sister Kaitangata Mine. Green's Seam district had been extensively drawn upon for output, the north level driven to the roll and No. 5 dip to the fault, pillaring and robbing being subsequently conducted. The carriage heading section, south extension, had been practically exhausted, and fire-stoppings are being put in. No. 6 dip in this section is down 100 ft. to the face. Stone drive crosscut section pillars have been freely drawn upon. The main cross-measures extension had intersected a new 6 ft. seam, and levels and headings are being driven for development. Air-register, 21,672 cubic feet per minute. Working-places, roadways, and airways maintained in safe condition with timber. Ventilation good. Traces of gas are occasionally met with in advancing places, which are kept bratticed up close to the face, and only safety-lamps used. A water-balance for man-hoisting purposes at the upcast air-shaft has been submitted to successive trials, which are yet incomplete. Rules posted. Report-books kept; and plans to date. Joseph Terry, twenty, repairer, sustained injuries to chest and head through being struck by a runaway box while working on No. 1 heading south, on the 26th May. The circumstances surrounding the runaway were not satisfactorily explained, but inquiry failed to elicit sufficient information to enable further proceedings being taken.

Wangaloa Coal-mine, Kaitangata.—(Joseph Smith, lessee).—The coal is still mined as required for local consumption.

Mainholm Colliery, Conical Hills, Waipahi (W. Lischner).—Opencast workings. 3,190 tons of lignite were produced during the year. Three men employed.

Central Otago.

W. J. Tonkin's Property, Ettrick.—Prospecting operations were carried out by David Jones, but the work proved unsuccessful in finding a payable seam of coal.

Coal Creek Collieries, Coal Creek Flat, Roxburgh (R. Pilling, jun., secretary; J. Barber, mine-manager).—(23/5/1906): Leasehold Mine: The "old mine" pillars and head coal were won opencast to water-level. A dip was then started to work the coal "underfoot," and a large quantity of coal has been won in this way. As all the coal from this section must now be mined from the dip, a new drive has been put in to meet the seam in the dip and lessen the water difficulty. 2,165 tons of coal were extracted from this section during the year.

Freehold Mine: Although 2,474 tons of coal were raised from this section during the year, very little work has been done during the last half-year. The dredging companies raised objection to the class of coal produced from the mine, and in order to retain the trade it was necessary to draw supplies from the leasehold section. Rules posted. Report-book and plan kept up. The company employs on an average ten men.

McPherson's Coal-pit, Coal Creek, Roxburgh (Mrs. M. McPherson, lessee; A. McPherson, manager).—(23/5/1906): This opencast pit has been worked during the year on the usual good lines. Two working-faces are now opened up. Six men are employed in stripping and in mining coal. 4,836 tons of coal were sold during the year.

Craig's Perseverance Coal-mine, Coal Creek Flat, Roxburgh (James Craig, lessee; W. Craig, permit).—(23/5/1906): The old dip-workings have been blocked off, and the north-western area, which was heating, has been flooded. A new dip drive has been put down to maintain ventilation, pumping, and haulage. On the eastern end of the lease the coal is being worked opencast. 3,372 tons were raised during the year. Six men employed.

Progress Colliery (Gully Pit), Roxburgh (A. Edmeades, lessee).—No work was done on this area during the year.

McQueenville Colliery, Alexandra (S. T. Lett, lessee).—(20/12/1906): The area is kept fenced off pending complete settlement of the worked-out portions. The surface plumps are being attended to at intervals.

Lett's New Mine, Gemmell's Gully, Alexandra (S. T. Lett, lessee).—(20/12/1906): No work has been done on this area during the year, and the lessee has abandoned his intention of working it.

Alexandra Coal-mine, Alexandra (Mathias Bros. and Co., lessees; A. Hunter, manager).—(10/1/1906): Mr. Hunter reported an occurrence of firedamp on the 4th instant in a pot-hole in roof at water lodgment, discovered while making ordinary morning examination with safety-lamp. The gas having been cleared by ventilation had not subsequently been seen. Working-places in good order, but air a little dull at two faces, which were improved by bratticing. The fault parallel to the dip

drive is interfering considerably with the southerly side of work. The area affected is three-quarters of a chain in width, within which coal is soft, broken, and inferior. (20/12/1906): This mine has continued to be worked on the usual good lines throughout the year. Unfortunately, the dip section of the seam is inclined to be soft. The workings, roadways, and air-courses are in good order. Ventilation good; plan kept; report-book to date; rules posted. 6,010 tons of coal were raised, principally for dredge requirements. The average number of men employed was two above ground and eleven below. Safety-lamp inspection continues to be regularly made prior to men descending to work.

Alexandra Coal Company, Alexandra (L. Ryan, secretary; James Pollock, mine-manager).—(29/9/1906): It is becoming quite evident from indications—*i.e.*, alteration of dip of seam toward the fault, also prevalence of "wet backs" in the riverward area to west of present workings—that if the coal-seam does not outcrop in that direction there is at least a change for the worse, and Mr. Pollock is now running his places along the fringe of the "wet back" area, which is becoming more defined, as may be seen on reference to the plan of the workings. In this section boreholes ahead, flank, and roof, regularly put in at intervals of 15 ft. and 20 ft. respectively for flank and roof-holes, and while the flank and straight boreholes indicate "wet backs" as they occur, it is remarkable that the roof-holes are all dry. Most of the water comes from the parting between the black and brown seams. Boreholes indicating "wet backs" are plugged up tightly as soon as water is detected. Inflow of water into the pit—viz., 150,000 gallons per day—is an appreciable reduction on what had latterly been usual. The row of watertight brick stoppings is completed and ready for use if and when required. An unfortunate accident happened on the 14th July, whereby four men were imprisoned for eighteen hours. A fire, supposed to have originated accidentally in the pumping-chamber, extended to the woodwork and bratticing at foot of the shaft, the lining timbers of which, being kauri timber, burned fiercely until several supplies of water from the surface having been laid on the fire became subdued. Rescue parties were organized, and the men were brought to bank suffering more or less from the effects of shock, foul air, and slight burns. The shaft is 73 ft. in depth, and, being the single outlet from the workings, not more than ten persons are employed below at any one time, as provided by section 46 "The Coal-mines Act, 1905."

Cambrian's Coal-pit, Cambrian's (Catherine Dungey, lessee).—Opencast pit. One man employed to supply limited trade.

Welshman's Gully Coal-pit, Cambrian's (James McGuckin, lessee).—(25/10/1906): The pit is mainly closed by slip clay from the face. A section of the seam is being stripped by water, where a few tons of coal are being taken out.

Jones's Coal-pit, Cambrian's (Lilah Jones, lessee; R. Jones, manager).—(25/10/1906): The hill-side having slipped in, the pit is now closed. Application is being made for a lignite license at Three-mile Creek, Lauder Station, over an area formerly known as McArthur's lease.

Blackstone Hill Coal-pit, Blackstone Hill (James Armitage, lessee).—(24/10/1906): Work was suspended during the winter, and has not been resumed, Mr. Armitage being of the opinion that the pit was worked out.

Price's Coal-pit, Blackstone Hill (D. McKnight, late G. Price, lessee).—Coal taken out for private use only.

St. Bathan's Coal-pit, St. Bathan's (James Enright, lessee).—(24/10/1906): Two men engaged stripping and carting spoil out of the pit, which is in fair working-order.

Rough Ridge Coal-pit, Idaburn (Mrs. M. Beck, lessee; William Beck, manager).—(24/10/1906): Stripping kept well ahead, but sales reduced, it is claimed, since the advent of the Otago Central Railway.

Idaburn Coal-pit, Idaburn (J. White, lessee).—(24/10/1906): Stripping kept well in advance of the working-face. Natural tunnels or waterway under-runners in the seam interfere with the work and spoil the face of coal.

Border Coal-pit, Rough Ridge (G. Turnbull, lessee, deceased; W. Roebuck, trustee, Oamaru).—No work has been done since Mr. Turnbull's death. The pit is idle and full of water.

Gimmerburn Coal-pit, Gimmerburn (C. Dougherty, lessee).—Forty-eight tons of coal were taken from this opencast mine to supply local requirements.

McCready and Coombs's Coal-pit, Kyeburn Diggings (W. Coombs, deceased, lessee).—Only about 6 tons mined for private use.

Healey's Lignite License, Kyeburn (Thomas Healey, licensee).—Want of funds is the reason assigned why no work has been done in prospecting for suitable inlet into the seam, which lies below the level of Kyeburn River.

Clyde Collieries Company, Clyde (A. C. Ackroyd, secretary, Dunedin; G. Smith, manager).—(16/8/1906): This company continues to develop this property according to trade requirements. The mine-workings are in good order. Ventilation is good throughout. Rules posted; plans kept; report-book up to date. The total output for the year from the Vincent and Dairy Creek sections was 4,196 tons, principally for dredge consumption. Ten men employed.

Fraser River Coal-mine, Shepherd's Flat, Clyde (James Goodger, secretary, Cromwell; C. Tippet, permit).—(18/5/1906): Mine-workings in fair order. Seam thin and roof bad, necessitating narrow work and good use of timber. Plan kept. Two men employed. The output of this pit depended solely on the operation of the Loch Lomond dredge. As this dredge ceased work in June, the pit has been idle ever since.

Scott's Freehold, Lowburn Flat.—The location of a seam of workable coal in the Clutha Basin would be of advantage to the dredges working in that locality. Some prospecting by boring was undertaken, but only a thin seam of coal was passed through. Further prospecting by boring was hindered by the stiff nature of the clay underlying the seam. It is intended to continue the search by shaft-sinking.

Cardrona Colliery, Cardrona (R. McDougall, lessee).—(11/12/1906): The lessee continues to work

this pit on the opencast system. A good supply of water under pressure enables the top material to be sluiced off. The coal is then mined to water-level. This pit supplies the requirements of the Cardrona, Wanaka, and Arrowtown districts. 8,588 tons of coal were raised during the year. Seven men employed.

Gibbston Coal Company, Gibbston Saddle (Duncan and Scheib, lessees; John Duncan, manager).—(13/12/1906): The company has leased the mine to Duncan and Scheib, who are carrying on operations on the usual lines. Timber is well used. Ventilation good, being maintained by a connection with the upper-level workings. Mine-workings in good order. The tramway down the mountain-side continues to work satisfactorily. Five men employed.

Cromwell and Bannockburn Collieries Company, Bannockburn (T. K. Harty, secretary, Dunedin; A. S. Gillanders, manager).—(18/5/1906): Kawarau Mine: The dip-face now stands at 850 ft. from daylight. The dip of the seam is not uniform, and has flattened out considerably, while there is a proportion of soft coal in the seam. The places are driven narrow to obviate the risk of breaks occurring in the roof. Drainage through the upper workings near the outcrop continues to give trouble. Ventilation good. Report-book to date. Plan kept. Rules posted. Thirteen men are employed in this mine.

Excelsior Mine: Connection has been made with the adjoining mine, Wilson's, and good ventilation is now obtainable. A start has been made to come home on the pillars in the Excelsior section. The mine-workings are in good order. Timber well used. Report-book to date. Plan kept. Rules posted. Twenty men employed in this section.

Wilson's Mine: Work in this mine has been confined to keeping the level and airway in order.

Cairnmuir Coal Company, Bannockburn (J. E. McCabe, secretary, permit).—(20/8/1906): This mine is now well opened out by shafts, and considerable improvement has been effected. The surface plant has been removed to the head of the incline-dip, while the air-connection has been completed through the mine. Mine-workings are in good order. The coal is hard and strong. 1,859 tons were raised during the year. Report-book and plan kept. Six men employed.

Charles Angel's Coal-pit, Bannockburn.—Mine worked for private use only.

Nevis Coal-pit, Nevis (Charles Scott, lessee, permit).—(19/12/1906): The lessee continued to work this lease principally to supply coal to the New Era dredge. There is a considerable proportion of soft coal in the seam at present being worked, but a smaller upper seam yielded coal of good quality. Two men generally employed.

Ryder's Coal-pit, Nevis (Charles Scott, lessee).—(19/12/1906): This pit is worked opencast, the overburden being sluiced off. Very little coal has been mined during the year, attention having been given to developing the pit to maintain a large output this season. Pit now in good order. One man employed.

Gunion's Coal-pit, Nevis (R. Gunion, lessee).—(19/12/1906): No work was being done on this ease at this date.

Ritchie's Coal-pit, Nevis (Robert Ritchie, lessee).—(18/12/1906): Seam semi-vertical. The pit is worked opencast, the overburden being sluiced off. 1,669 tons, principally for dredge requirements, were raised during the year. Three men employed.

James Ritchie's (late Graham's) Area, Whitton's Creek, Upper Nevis.—(18/12/1906): This coal is not in demand for steam purposes owing to its soft friable nature, which is due to its proximity to the Upper Nevis fault-line. Blocks of hard coal are sometimes met with during sluicing operations in this district, but they are not continuous.

SOUTHLAND.

Pukerau Coal-pit, Pukerau (C. O'Hagan, permit).—(18/6/1906): No. 1 lease (area, 10 acres): Water proved troublesome under the present system of working the coal from the dip of the level. A new drive is being driven to the dip of the present workings to enable the coal to be won water-free. The seam is thick and strong, and the mine-workings are in good order. Ventilation good. The lessee intends to sink a new pumping-shaft further to the dip. Three men generally employed. Rules posted. Plan kept.

No. 2 lease (area, 5 acres): This area is not being worked. The lessee considers it can be worked to best advantage from No. 1 lease when the workings are far enough advanced.

Nelson's Coal-pit, Pukerau (J. H. Nelson).—(18/6/1906): Two men are generally employed in this mine, which is worked for district requirements only. The seam is thick and strong, and the mine is in good order. Water troublesome. The lessee intends to install an oil-engine and belt-driven pump.

Mason's Coal-pit, Pukerau (A. Mason).—Coal taken out for private use only.

Milne's Coal-pit, Pukerau (A. Milne).—Coal taken out for private use only.

Glover's Coal-pit, Pukerau (Thomas Glover).—Coal taken out for private use only.

Riverview Coal-pit, Gore (L. D. Nicol, owner).—This pit is situated on freehold land. Supplies are drawn for private use and limited district requirements.

Hoffman's Coal-pit, East Gore (T. Hoffman, lessee).—(13/12/1906): This pit was opened out with the view of locating an alleged trespass by the neighbouring colliery-owner. 408 tons 7 cwt. of coal were mined, but as the seam at this place did not prove suitable the mine was closed down.

Whiterigg Colliery, East Gore (W. H. Paterson, owner; John Hartley, permit).—(13/12/1906): The area affected by "creep" having settled, new workings are being opened to northward. Owing to the extreme competition resulting in the reduction of the selling-price in the district, trade is slack at this pit. Two men were employed taking out old pillars in the "rise" section to get dry coal for the household trade. Powder carefully stored and used. Ventilation good. Rules posted. Plan kept.

Heffernan's Coal-pit, East Gore (W. Burgess, lessee, permit).—(9/10/1906): Since last visit a boiler and steam-pump have been installed, and operations have been extended to the dip. The dip

having been driven excessively wide, for safety, I gave instructions to reduce the width to 16 ft. and to increase the size of the pillars. Timber at mine-mouth requires renewal. Rules posted. Powder well handled. Ventilation good. Two men employed. On the 26th May, 1906, Joseph Lamberton, miner, sustained fracture of fibula in a simple manner by a piece of coal rolling on to his leg.

Rosedale Coal-pit, Waikaka Valley (A. Reinke, owner; A. Mutch, lessee).—(11/9/1906): Pit situated on freehold land. Supplies are drawn from this opencast pit principally for dredge requirements in Waikaka Valley. 944 tons were raised during the year. One man generally employed.

Michael Leitze's Coal-pit, East Gore.—Coal mined for private use only.

A. McDonald's Coal-pit, East Gore.—(9/10/1906): No coal was taken out during the year.

Robert Smith's Coal-pit, East Gore.—Pit on freehold land. Coal mined for private use only.

H. Smith's Coal-pit, East Gore.—Pit on freehold land. Coal mined for private use only.

Green's Coal-pit Gore (Thomas Green, owner; J. Mason, manager).—(13/12/1906): During the last half-year, Smyth's lease having expired, the owner assumed control over the mine. Considerable alterations have been made to the haulage-roads, loading-banks, and machinery on the surface. A new haulage-engine, steam-boiler, and steam-pump have been added to the plant, which is now capable of turning out an increased output. 7,881 tons of coal were raised during the year. The mine is in good working-order. Compressed powder carefully used. Rules posted. Report-books and plan kept. Eleven men are employed.

Smyth's Coal-mine, Gore (Joseph Smyth, owner; John Smyth, permit; reopened).—(13/12/1906): This mine has recently been reopened, and steam boiler and pump installed. The water is out, and coal is now being produced. The mine had only slightly deteriorated during the nine years which it had been standing.

Tait's Coal-pit, Bushy Park Estate, Croydon (James R. Tait and Co., owners).—(13/12/1906): This new pit is situated at the head of Charlton Valley, and was opened to supply fuel for sawmilling and dredging operations. A tramline, six miles in length, has been constructed down the valley to connect the pit with the various dredges. The seam is 14 ft. to 20 ft. in thickness, and is worked opencast. Thickness of clay stripping, 5 ft. and upwards. Three men employed.

Knapdale Coal-mine, Knapdale (W. Irvine).—Pit idle throughout the year. Further winning of the coal to the dip would necessitate installation of winding and pumping plant.

Boornwell Coal-pit, Chatton (G. P. Johnson, owner; James Stark, permit).—(13/12/1906): This visit was paid in connection with an accident to John Ramsay, who sustained injuries to head and face and back by a fall of coal from roof on the 5th December, 1906. I learned that Ramsay had fired a shot the previous evening, and on the morning of the accident had filled away several boxes of coal, when a flake came away from the roof inflicting injuries described. It would appear that Ramsay (who was in charge of the pit during temporary incapacity of Mr. Stark) had not carefully examined roof of place after shot-firing and before proceeding to work thereunder.

Pacey's Leasehold Coal-pit, East Chatton (R. Pacey, lessee).—(11/9/1906): Nothing has been done on this lease during the year.

Pacey's Freehold Coal-pit, East Chatton (R. Pacey, owner; W. McIvor, permit).—(13/12/1906): Opencast pit, 10 ft. to 12 ft.; seam, 30 ft. Thomas Maslin sustained burns on the arm on the 22nd November, caused by a spark from a spitting fuse igniting loose blasting-powder in a tin which Maslin had been using.

Perkins's Coal-pit, East Chatton (A. Perkins, lessee).—(13/12/1906): A set of timber has been placed at mine-mouth, and Perkins promised that the clay-bank face would be trimmed for safety during the forthcoming holidays.

Chatton Coal-pit, Chatton (A. Beath, lessee).—(16/10/1906): This vertical seam is disadvantageously situated owing to the heavy overburden and the soft nature of the walls. In the upper level the seam proved to be broken and soft. The dip was then turned away at a steeper grade to open out at a lower level. Owing to the heavy drainage, and the absence of suitable hauling and pumping machinery, the venture proved unpayable, and the mine has been closed down. Two men were employed.

Cross's Coal-pit, Otama (Cross Bros., owners).—This coal-pit is situated on freehold land, and coal is mined for private use, also during the threshing season.

Thorndale Coal-pit, Waikaka Valley (William Lloyd, owner; F. Raunsley, lessee).—(9/10/1906): The condition of this pit is such that unless expenditure is incurred on suitable pumping machinery the future output will be very limited. Owing to the heavy nature of the overburden, there is now a tendency to undermine the face in order to maintain the trade. I instructed the owner and the lessee to desist from this method of working. One man generally employed.

Springvale Coal-pit, Waikaka Valley (J. P. McIntyre, owner, Gore; D. McColl, lessee).—(10/7/1906): Opencast pit; seam, 10 ft. in thickness; stripping, 10 ft. The pit supplies coal for dredge and local purposes. The overburden is kept well stripped back, and the pit is in good working-order. Suitable powder-magazine provided. Output for the year, 2,576 tons. Two men generally employed.

Willowbank (late Reed's) Coal-pit, Waikaka Valley (W. Paterson, owner; W. Jones, permit).—(10/9/1906): A suitable winding and pumping plant having been installed, operations are being continued to the dip. Good ventilation is maintained through several openings into the mine. The mine-workings are in good order; timber well used; powder carefully used. Rules posted. Six men employed.

McGill's Glenlee Coal-pit, Wendon Valley (J. McGill, owner; D. T. McGill, permit).—(15/10/1906): This mine is situated on freehold land. One man is generally employed, as the output is limited. The coal is worked partly opencast and partly underground. Explosives well stored and carefully used.

McDonald's Coal-pit, Wendon Valley (A. A. Edge, owner; S. Coulter, permit).—(15/10/1906): Operations are being carried on as usual in this pit. 3,481 tons of coal were raised and sold, principally

for the requirements of dredges working in Waikaka Valley. The mine is in good working-order. Ventilation good. Powder well stored and carefully used. Rules posted. Four men employed.

Edge's Coal-pit, Wendon Valley (A. A. Edge, lessee).—No coal has been mined from this area during the year.

J. Bushbridge's Coal-pit, Wendon Valley.—Supplies are drawn from this pit during the summer months for threshing and winter use.

Perkins's Coal-pit, Wendon Valley (George Perkins).—Coal mined for private use only.

Henderson's Coal-pit, Wendon Valley.—Coal mined for private use only.

Radford's Coal-pit, Wendon.—This pit was idle throughout the year.

Mystery Flat Coal-seam, Waikaia.—A bed of lignite from 2 to 4 chains in width has been proved by boring and dredging operations to exist in the main valley opposite Monaghan's woolshed, Landslip. It was proposed to work this seam, but the plan was not carried through.

Landslip Coal-mine, Waikaia (Landslip Coal Syndicate, owners; W. E. C. Reid, secretary, Dunedin; R. Brown, manager).—(11/1/1906): The tramway bridge, 4 chains in length, across the Waikaia River facilitates coal-loading when the river is in fresh. The coal-seam is 18 ft. in thickness, of which 8 ft. is being extracted first working; pillars, 30 ft. square. Increased air-circulation by erecting a chimney on the upcast shaft, and utilising exhaust steam from pump is under consideration.

Kyle and Sons' Coal-pit (lately Rear's), Waikaia (William Kyle, permit).—(11/10/1906): Coal-seam tender, and care required to maintain the places intact. The low-level drainage-tunnel being driven should prove a benefit.

Rossvale Coal-pit (late Ross's), Waikaia (Bond and Cain, lessees; J. Bond, permit).—(11/10/1906): Mine-entrance well timbered, and main level is in good order, and gradually getting around Ross's old workings, which are fallen. The lower seam is 10 ft. in thickness, of which 6 ft. is worked, leaving strong roof in coal so long as present width of bords (8 ft.) is not exceeded.

Monaghan's Coal-pit, Landslip, Waikaia (R. Monaghan, lessee; J. T. Young, permit).—(11/10/1906): North-going levels are driven past old workings, which are fallen. This seam will not stand wide or high drives, and the roof of soft sandstone is not self-supporting. Stentons for air are driven at regular intervals. The proprietor contemplates selling his interest in the mine.

Muddy Terrace (Shale-pit), Waikaia (T. F. Goldie, owner; J. M. Hazeldine, manager).—(23/3/1906): This seam is now worked partly by opencast and partly by underground mining. The mine-workings are in good order. Timber well used. Ventilation good. The seam is 17 ft. in thickness. The depth of clay-stripping in the open face is 15 ft. Six men are employed.

Argyle Coal-pit, Upper Waikaia (J. and T. Baxter, lessees).—(22/3/1906): Owing to its distance from the dredging-field this pit does not maintain a steady output. The supply is chiefly to farmers, and does not exceed 250 tons per annum. The seam is worked opencast. Two men employed.

Pyramids Coal-pit, Mandeville (E. MacAllister, owner).—The mine has not been reopened during the year.

Waimea Coal-pit, Waimea Village, Waimea.—This pit has been idle throughout the year.

Radford's Coal-pit, Balfour (E. Fitzgerald, owner).—Only 152 tons of coal were mined from this property in the early part of the year.

H. Studholme's Coal-pit (late R. McKenzie's), Blackmount Station, Takitimo District.—Forty-five tons of coal were mined from this pit for private and station requirements.

Waimumu Coal-pit, Mataura (C. P. Sleeman, owner).—(10/10/1906): Operations have been conducted on the usual good lines throughout the year. Two faces are now opened up, and steady supplies are drawn from them. 8,215 tons of lignite were raised and sold during the year. Powder carefully stored and handled. Seven men generally employed.

Boghead Coal-pit, Mataura (A. Cameron and James Duncan, lessees).—(10/10/1906): 375 tons of coal were raised during the early part of the year, but work was suspended in March, and the pit has been flooded since that month.

Mataura Lignite-pit, Mataura (Beattie, Coster, and Co., owners; W. Coster, manager).—(10/10/1906): Opencast pit in good working-order. Large area of overburden stripped in advance of working-face. Powder well stored and canisters provided for use. 7,427 tons of lignite were raised and sold during the year. Nine men generally employed.

McGilvray's Coal-pit (late Mutch's), Mataura.—No coal was mined from this pit, but 14 tons of hæmatite were raised for the Mataura Paper Mills.

Waimumu Colliery Company, Waimumu (H. W. Royds, secretary; W. J. Williams, manager).—(12/9/1906): This pit is worked on the opencast system. On this visit I found that the overlying clay had not been kept sufficiently well stripped back from the working-face and haulage-road. In consequence of the wet weather the overburden had slipped over the face. I instructed the manager to withdraw the men from the coal and clear off the overburden to a safe distance. (17/10/1906): Revisited the pit on this date, and found that a large area of the overburden had been cleared off with ploughs and scoops. 4,314 tons were raised and sold during the year, principally for the supply of dredges working in the Waimumu Valley. Powder well stored and handled. Ten men employed.

Nightcaps Colliery, Nightcaps (J. Lloyd, mine-manager; William Handyside, managing director).—(14/10/1906): No. 1 district, north-going and dip sections: Under the policy of development in advance as hitherto carried out boundaries to rise of water-free level have been reached, consequently extraction of pillar and head coal is now in full swing. Large quantities of timber are used for protection of the workmen, and many crib log buildings erected on roadsides for support of roof on the lips of the waste are rendered necessary by reason of the numerous clay backs which occur at irregular angles in the coal-seams. No. 2 district (pillars): Robbing of pillar and head coal continues to be safely done. The district is drawing homeward gradually. Timber plentifully used, most of which is withdrawn and used over again. The ventilation of the colliery is generally good, as the fan is working well within

its power. In far-in levels, &c., brattice is carried to working-faces for ventilation as required. The opencast workings continue to furnish a considerable proportion of the total output. Stripping of overburden systematically carried out and workings are safely conducted. All plant and machinery maintained in good working-order. Report-books and plans to date.

Hit or Miss Coal-mine, Nightcaps (William Tinker, lessee, permit).—(27/9/1906): At this date the lessee was busy putting in a new drive to reach the coal-seam on adjoining sections. The mine is unwatered by means of syphon.

Lamont's Coal-mine (H.B.), Nightcaps (D. McKenzie, permit).—603 tons of coal were raised from this mine during the year. The mine is now closed.

Morley Coal-pit, Nightcaps (G. R. Spence).—Opencast pit, from which 1,167 tons of coal have been taken during the year.

McBride's Coal-mine, Nightcaps (William Reed, lessee, permit).—(27/9/1906): Driving a level westerly on strike of the coal, the intention being to thereby prove an area of 10 acres held by McKenzie and Cousins and lying to westward of McBride's section. Meanwhile coal is carted a distance of three miles to Wairia Railway-station, but a proposal is afoot to lay down a tramway to the station.

The Willow Coal-pit, Nightcaps (John Clark).—330 tons of coal were mined for local requirements from this opencast pit during the year.

Groves's Coal-pit, Manuka Hill, Nightcaps (George Groves).—(27/9/1906): A new pit. A wooden tram-line, 60 chains in length, has been laid to the opencast pit at the foot of the hill.

Hogan's Lignite License, Orepuki (Cornelius Hogan, licensee).—Opencast pit. Four tons of lignite were raised during the year. An inferior seam of lignite, 8 ft. in thickness, occurs on the banks of Falls Creek. There is nothing doing, and from appearances the pit is closed down, if not abandoned.

Bush Siding Coal-pit, Seaward Bush (I. W. Raymond, late R. W. Robson, lessee; F. Bowden, manager).—(29/8/1906): Working opencast on north side of railway-line. Seam, 20 ft. Stripping of clay, 6 ft. to 8 ft., is kept fairly well in advance of working-face.

Thomas Gillies's Coal-pit, Clifton.—The pit is still flooded owing to the small pump being unable to cope with surface drainage, and no coal has been mined during the year.

Remarks.

Contributions by coal-owners to the Coal-miners' Relief Fund amounted to £465 16s. 7d., while payments from the fund to the amount of £416 18s. 11d. have been recommended on account of accidents which have occurred in and about coal-mines in this district during the year.

Accidents.

During the year 118 cases of accident were reported to me, three resulting fatally, while nine might be termed serious, and the balance, 106—mainly trivial accidents incidental to the calling—were chiefly reported to me in connection with claims for relief from the Coal-miners' Relief Fund, there being no Sick and Accident Fund in connection with the miners' associations in the district. For various reasons eleven of the claims were not prosecuted by the claimants.

All accidents of a serious nature were inquired into and reports thereon duly forwarded to you by me.

Fatal Accidents.

5th February, 1906.—Alexander Bennie, fifty-one, miner, Kaitangata Colliery, Kaitangata: Fatally injured by fall of coal at face.

8th November, 1906.—Frederick Olive Anderson, forty-seven, acting assistant manager, and William Lee, twenty-four, mechanical engineer, Kaitangata Colliery: Suffocated by foul gases in return airway.

Non-fatal (Serious) Accidents.

26th May, 1906.—Joseph Terry, repairer, Castle Hill Colliery, Kaitangata: Fractured rib, injuries to chest, lung, and head; struck by runaway box on heading. 164 days off work.

26th May, 1906.—Joseph Lamberton, miner, Heffernan's Colliery, Gore: Fracture of fibula by piece of coal rolling on to leg. Seventy-two days off work.

25th July, 1906.—Neil McAllister, assistant manager, and Charles Milne, repairer, Kaitangata Colliery, Kaitangata: Severe burns about face, hands, and body by small fall of heated sand and live coal which fell from brick-wall fire-stopping. 142 and 143 days off work respectively.

10th October, 1906.—John McCaughern and William Proctor, deputies, Kaitangata Colliery, Kaitangata: Burns of face and arms by ignition of firedamp. Each sixty-one days off work.

5th December, 1906.—John Ramsay, miner, Burnwell Coal-mine, Chatton: Injuries to head and back by fall of coal from roof.

17th December, 1906.—James Hill, banksman, sinking air-shaft, Kaitangata Colliery, Kaitangata: Severe burns of face, arms, and body by ignition of firedamp at surface.

17th December, 1906.—David Coulter, miner, sinking air-shaft, Kaitangata Colliery, Kaitangata: Burns of face, neck, and arms by ignition of firedamp at surface. Forty-nine days off work.

I have, &c.,

E. R. Green,

Inspector of Mines.

APPENDIX B.

PAPERS SET AT THE 1906 MINE-MANAGERS' EXAMINATIONS.

EXAMINATION OF CANDIDATES FOR CERTIFICATES OF COMPETENCY AS FIRST-CLASS MINING-MANAGERS.

SUBJECT NO. 1.—*On Shaft-sinking, Tunnelling, and Opening out a Colliery.*

1. If you were charged with the exploitation of a coal lease of 2,500 acres, and the strata were monoclinal, what preparatory measures would you adopt; also, how would you determine the position of shafts and service equipments?

2. Describe and show by sketches the various methods of sinking through heavily watered alluvial deposits. If portion of a shaft 18 ft. diameter in the clear is to be lined with cast-iron tubbing, with water-pressure thereon of 197 lb. per square inch, what thickness of metal would you have put in?

3. What are the dangers to be apprehended from the turning and oscillation of the sinking bucket in a deep shaft? Show by sketch a suitable apparatus to prevent such; and how is it fixed?

4. Describe the method of putting in a bricking curb in a sinking shaft, also of putting in a length of brickwork; likewise the method of putting in a water-ring. What precautions should be taken during these operations (*a*) if inflammable gas is given off, (*b*) if the sinking is in hard ground?

5. Two shafts, 1,750 ft. and 1,785 ft. deep respectively, are sunk from a level surface to a gassy seam 5 ft. thick, having inclination of 1 in 10, with a soft floor: give dimensions of shaft-pillars, and state which shaft you would make the upcast, and why. Show by sketches position of shafts and shaft-pillars, arrangement of pit-bottom, position of main intake and return airways, direction of air-currents through workings to upcast. Give sizes of air-courses and roadways. Provide for a daily output of 1,300 tons.

6. Describe and show by sketches the different kinds of cage-conductors used in shafts, and the various methods of arranging and fixing same.

SUBJECT NO. 2.—*On working Coal, and timbering underground.*

1. Explain the advantages and disadvantages of bord-and-pillar and longwall methods of working coal-seams, respectively. Describe and show by sketches the system of working under the foregoing methods.

2. Given a coal property of 1,200 acres, with a seam 6 ft. 3 in. thick, dipping 1 in 18, and a cover of 1,100 ft., with hard bottom and tender roof, what system of working would you adopt, and why? Show by sketch how you would lay out the workings.

3. Explain the different causes of "creep," and give sketches showing effect of same; also describe what precautionary measures you would adopt to obviate "creep" under the various conditions.

4. Describe, and show by sketches, how you would set props, also timber sets, for the support of the roof in a seam having an inclination of 30°; likewise how you would secure a longwall face, with tender roof and floor, the seam being 4 ft. 9 in. thick, and inclination 1 in 5.

5. Calculate the diameter of a circular beam of timber, 12 ft. between supports, and load distributed, for a breaking-strain of $100\frac{4}{15}$ tons (coefficient of rupture, ·75).

6. Describe, and show by sketches, in plan and side elevation, the different systems of working and timbering places, both in flat and very steep seams, also the method of securing the working-faces under both conditions, whilst holing and cutting.

7. Describe, and illustrate by sketches, different methods of pillar-working, and explain the principal dangers to be guarded against during extraction.

SUBJECT NO. 3.—*On the Gases of Mines, Spontaneous Combustion, and Ventilation.*

1. Give the chemical properties of firedamp and black damp, and their weights compared with atmospheric air. State the residual gases from an explosion of firedamp, and what are their properties and effect on human life.

2. Under what conditions may a small amount of explosive gas render a mine exceedingly dangerous? Also, if a quantity of gas occupies 19,750 cubic feet when the barometer reads 30·3 in., how and in what manner will the volume be affected if the barometer falls to 28·4 in.?

3. It is required to travel 90,000 cubic feet of air per minute through an airway 18 ft. wide by 8 ft. high, and 1,790 yards long: what pressure will be needed to do so? Give answer in feet of air-column, and also inches of water gauge; likewise show what quantity of air would pass if water gauge doubled.

4. State what are the causes of spontaneous combustion in mines; also name the gases generated by gob-fires, and describe their properties and action on human beings. In a seam liable to spontaneous combustion, what precautions would you take to obviate the occurrence of fires?

5. Describe the various systems of ventilation in mines. Show sketches of an overcast and undercast, and describe their uses; also explain the uses of regulators, doors, and stoppings. State the most advantageous method of splitting air, and its limit.

6. Forty thousand cubic feet of air per minute is split into three airways, A, B, and C: A is 1,400 yards long, 4 ft. high, and 6 ft. wide; B 1,000 fathoms long, 5 ft. by 7 ft.; and C is 7,500 ft., and 6 ft. by 12 ft.: what quantity will each get?

7. A volume of 310,000 cubic feet of air per minute is passing in a downcast shaft 18 ft. diameter and 1,300 ft. deep: what is the extent of rubbing-surface, also the velocity of air per second?

SUBJECT No. 4.—*On dealing with Old Workings and other Sources of Danger.*

1. State what dangers are liable to arise from extensive old workings in a mine, and what precautionary measures you would adopt to obviate same and prevent accident.

2. What would you consider dangerous explosives to use in dry and dusty mines? Where you permitted explosives to be used in such mines, what precautions would you take, and what instructions would you give?

3. Assuming you were in the workings of a mine, in charge, and an active fire broke out on the main intake airway, what steps would you take for the safety of the workmen?

4. Describe the various types of water-dams used in mines. Assuming a feeder of 3,000 gallons per hour has to be be dammed off, explain and illustrate by sketches how you would construct a dam to do so, in a place 12 ft. wide by 6 ft. high, and to withstand an ultimate pressure of 300 lb. to the square inch; give the head of water in feet for said pressure, also total weight in tons against the dam.

5. Enumerate the causes of coal-dust explosions in mines, and explain measures you would take for their prevention.

6. Describe in detail the steps you would take if charged with the direction of operations immediately after an explosion in a coal-mine operated by shafts, and the ventilation effected mechanically, but the appliances for the latter damaged by the explosion.

7. What accidents are liable to occur from the use of naked lights in mines? In a mine worked with naked lights, describe fully the conditions which would necessitate the introduction of safety-lamps.

SUBJECT No. 5.—*On Steam Boilers and Engines used about Mines.*

1. Describe the various types of steam-boilers in use at collieries, and show sketch of any one type with the necessary mountings in position; also calculate the safe working-pressure of steam for a Lancashire boiler 28 ft. 6 in. by 8 ft., with double-riveted steel plates 0·875 in. thick.

2. Enumerate the various kinds of mechanical stokers; describe the principle upon which they operate, and explain the chief points of their utility; also show by sketch a longitudinal section of a boiler-furnace fitted with a chain-grate stoker.

3. In operating steam boilers and engines, what important measures is it imperative to observe whereby accidents may be avoided?

4. An underground haulage-engine with pair cylinders 12 in. diameter has to be driven by compressed air at 60 lb. per square inch ordinary pressure: show diameter of single-stage air-compressing cylinders required to compress sufficient air to maintain the said pressure, assuming uniform speed of air-compressors and haulage-engine.

5. A pair of capstan engines have cylinders 12 in. diameter and 2 ft. stroke; the effective steam-pressure is 90 lb. per square inch; the pinion and spur wheels between first and second shafts are 2 ft. and 5 ft. 6 in. diameter, and between second and third shafts 1 ft. 6 in. and 6 ft. diameter; the capstan-drum is 5 ft. 9 in. diameter: what load can be lifted, not calculating friction?

6. Calculate the thickness of metal required in a cast-iron pipe 7 in. internal diameter for a working-pressure of 120 lb. of steam per square inch; also give sketch, both plan and section, of a stuffing-box and gland steam-pipe expansion joint.

7. A fan produces 90,000 cubic feet of air per minute, at 80 revolutions, with 2·3 in. water gauge: calculate the horse-power of fan, also engine, taking useful effect of fan at 65 per cent. Also, what would be quantity of air, water gauge, horse-power of fan, and horse-power of engine if fan-speed reduced to 60 revolutions? With direct-coupled engine, calculate diameter of steam-cylinder and thickness of metal, also length of stroke, to drive fan at 80 revolutions; mean effective steam-pressure, 80 lb. per square inch.

SUBJECT No. 6.—*On Mine Drainage and Haulage, and Appliances for same.*

1. Seven hundred tons of coal are to be hauled in eight hours by endless rope; gradient against the load, 1 in 7; length of road, 1,850 yards; average effective pressure of steam on piston, 80 lb. per square inch; piston-speed, 280 ft.; speed of rope, 2¼ miles per hour; empty tubs weigh 5 cwt. each, and when loaded carry 12 cwt. of coal: calculate size of pair of engines to effectively do this work, also the ratio of gearing.

2. Sketch in detail a longitudinal vertical section through the centre of the steam and water chambers of a direct-acting steam-pump; also describe the principle of, and show by sketch, a mine-pump actuated by a column of water.

3. A pair of winding-engines have cylinders 30 in. in diameter, with stroke 5 ft., the effective steam-pressure on piston being 90 lb. per square inch: calculate the maximum diameter the drum can be made whereby the engines can lift an unbalanced load of 5½ tons. (Allow one-third for friction, and reckon upon one engine to lift the load.)

4. Describe the modern appliances used in connection with coal-winding arrangements, to give the maximum amount of safety; also describe and show by sketches the onsetting and banking-out arrangements of a deep winding-shaft, to deal with an output of 1,200 tons in eight hours.

5. Describe briefly, and illustrate by sketches, the various arrangements adopted for taking up slack rope in endless-rope haulage; also explain the methods of communication between different stations on a haulage system.

6. The delivery column of a steam-driven double direct-acting pump is 2,000 ft. long; the first 300 ft. rises 1 in 5, next 600 ft. 1 in 4, next 540 ft. 1 in 3, and the last 560 ft. are vertical: what is the pressure per circular inch on the plungers? The discharge is 30,000 gallons of water per hour at pump-speed of 100 ft. per minute: calculate size of pistons, plungers, also of suction, delivery, and steam pipes.

SUBJECT No. 7.—*On Geology, Surveying, and making Plans.*

1. Describe the various strata, in descending order, superimposed over any coal-seams in this colony of which you have knowledge; likewise name and describe the action of the geological agencies which operate on the earth's crust.

2. Show by sketches the effect upon coal-seams of faults and igneous dykes, and explain the common action of such on the adjacent coal.

3. Explain the various reasons which make underground surveys necessary in conjunction with the practical working of a mine; also state what are the advantages of having the levels marked on colliery-plans.

4. A rectangular coal lease contains 420 acres, the width is $22\frac{8}{11}$ chains: what is the length in chains? Also, what would be the length of the side of a square of equal area?

5. Candidates to produce plan showing the workings of a colliery with the surface taken up for at least 20 acres in the vicinity of the shaft or adit, the workings to be shown in colours. The connection between the surface and underground must be shown and described in the event of there being only one shaft. The levels and main headings must have assumed traverse calculated in detail, and showing latitude and departure for each bearing. The plan to be candidate's own work, and to be accompanied by field-book.

6. The perimeter of a triangular reservoir is 61 chains; A–B is $\frac{5}{8}$ of A–C, and 3 chains longer than B–C: find the length of each side.

7. Plot the following bearings with protractor and scale, and calculate the latitude and departure and give course and length from G to A:—

A–B, N. 41° 30′ E., 520 links.
B–C, E. 450 links.
C–D, N. 9° 15′ E., 450 links.
D–E, S. 69° 30′ E., 500 links.
E–F, S. 36° 25′ E., 750 links.
F–G, S. 42° 45′ W., 450 links.

8. What instruments are necessary for making an accurate survey and level? Describe how you would adjust and test the accuracy of each instrument.

SUBJECT No. 8.—*Arithmetic, and a Knowledge of "The Coal-mines Act, 1905."*

1. In portion of a coalfield containing 380 acres the seam is 7 ft. 6 in. thick, yielding $\frac{9}{10}$ of a ton per cubic yard; 20 per cent. is lost through faults and in working; the miners produce 80 per cent. of large and 20 per cent. of small coal: what are the total amounts paid for hewing at the rates of 1s. 10½d. per ton for large and 8½d. per ton for small, and for royalty at 6d. and 3d. per ton on large and small coal respectively?

2. A shaft 200 fathoms deep has to be bricked to a finished diameter of 18 ft. clear, with an average of 14 in. of brickwork: state how many rods of brickwork required, and the number of bricks, standard size, to complete the work; also show in cubic feet the quantity of *débris* excavated during the sinking of the shaft.

3. A mine-reservoir covers 1 acre 1 rood 11 poles $17\frac{1}{4}$ yards of ground, and contains 5,400,000 gallons of water: what is its average depth?

4. In a 7 ft. seam of coal, the headings, 9 ft. wide, are being driven at the rate of 14s. $2\frac{1}{10}$d. per lineal yard; it is desired to alter this system to a tonnage rate: what price per ton would equal the cost per yard, a cubic yard of coal weighing 0·9 of a ton?

5. How many gallons of water per minute should a pump deliver to lower a lodgment of 28 acres a depth of ½ in. per twenty-four hours, working constantly, and with a regular feeder of 90 gallons per minute flowing into lodgment?

6. The cost of getting out and putting into wagons of 295,000 tons of coal is 5s. 9½d. per ton, the other expenses amounting to 4s. 2½d. per ton: find the total profit if 70 per cent. of the coal is sold at 13s. per ton and the remainder at 9s. 6d. per ton, a discount of 5 per cent. being allowed to purchaser.

7. Fifty thousand gallons of water has to flow through a 3 in. pipe at a velocity of 220 ft. per minute: how long will it take to run the water off?

8. Briefly state the requirements of "The Coal-mines Act, 1905," as to—

(*a*) Ropes, chains, and machinery;
(*b*) Securing of shafts;
(*c*) Ventilation;
(*d*) Withdrawal of workmen, &c.;
(*e*) Plan of workings;
(*f*) Serious accidents;
(*g*) The use of safety-lamps.

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

First-class Mine-managers' Certificates.

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

Aitken, T., Wendon.
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., Kamo.
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.

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

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.
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.
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, Wm., 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.

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

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.

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

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

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

Alison, R., Greymouth.
Dixon, J., Westport.
Fletcher, George, Westport.
Frame, Joseph, Kaitangata.
Goold, A. L., Auckland.
Irvine, James, Dunedin.
*Jordan, R. S., Kaitangata.
Kirkwood, D., Coromandel.
Lewis, W., Blackball.
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' Service Certificates.

Issued under "The Coal-mines Act, 1905."

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.
Lennox, W., Springfield.
Lobb, Joseph, Mokau.
Longstaff, H. C., Kaitangata.
Love, Alexander, Orepuki.
McCall, John, Wellington.
McGeachie, J., jun., Mokau.
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.

*Deceased since issue of certificates.

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

Austin, W. B., Sheffield.
Barber, John, Shag Point.
Barclay, T., Kaitangata.
Barclay, T., jun., Kaitangata.
Barclay, Wm., Kaitangata.
Barnes, A. E., Shag Point.
Brown, Robert, Kaitangata.
Cadman, J., Hikurangi.
Campbell, Peter, Fairfield.
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.
Fox, R. A., Blackball.
Harris, A., Saddle Hill.
Hill, R., Abbotsford.
Hodson, John, Kaitangata.
Hunter, A., Southland.
Kells, F. H., Denniston.
Lindsay, J. B., Orepuki.
McAllister, Neil, Kaitangata.
McLelland, J., Kaitangata.
McLelland, A. C., Kaitangata.
McNeill, D., Fairfield.
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.
Snow, T., Mercer.
Tattley, F. J., Mercer.
Taylor, Joseph, Collingwood.
Thompson, Joseph, Blackball.
Waldie, A. B., Mokau.
Westfield, C., Fairfield, Otago.
Whittleston, A. W., Shag Point.

APPENDIX C.

SECTION VII.—STATISTICS OF WORKINGS IN COAL-MINES, 1906.

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 1906.			Approximate Total Output to 31st December, 1905.	Approximate Total Output to 31st December, 1906.	Number of Men ordinarily employed.			Power used for drawing Mineral.	Pumps.			Means of Ventilation.	Date of Inspector's Last Visit
										Size of Shaft or Adit.	Depth of Shaft or Length of Adit.		Coal.	Slack.	Total.			Above.	Below.	Total.		Stroke.	Size of Barrel.	Height of Column.		
NORTHERN DISTRICT.																										
KAWAKAWA DISTRICT.																										
Kawakawa Mine	Neill, S. ..	8	semi-bitum.	1	pillars 6′	6′	1 in 3	bord and pillar	1	5′ 6″ x 3′ 6″ x 5′ 5″	200′	adit	Tons. 275	Tons. ..	Tons. 275	Tons. 71,598	Tons. 71,873	3	..	3	horse	..	..	..	..	..
HIKURANGI DISTRICT.																										
Hikurangi Coal Company ..	Moody, T. P. ..	14	ditto	1	7′ to 12′	7′ to 10′ 6″	1 in 6	ditto	4	6′ x 5′	264′	„	52,709	..	52,709	411,004	463,713	8	68	76	horse and steam	10″ 10″	8″ 8″	50′ 50′	natural	12/12/06
Northern Coal Company ..	Dunn, W. R. ..	9	„	1	6′ to 9′	6′ to 9′	1 in 10	„	1	9′ x 6′	1,782′	„	46,711	..	46,711	138,762	185,473	12	58	70	ditto	..	..	..	„	11/12/06
Waro Co-operative Coal Company (late Phœnix and West Bryan's)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	79,371	79,371	..	..	..	..	..	..	..	..	..
NGUNGURU DISTRICT.																										
Ngunguru Mine	Tattley, E. W. ..	14	semi-bitum.	1	2′ to 5′	2′ to 5′	1 in 6	extracting pillars	1	..	..	adit	1,448	..	1,448	194,006	195,454	12	37	49	steam	8″ 6″	5″ 3″	100′ 30′	fan	11/12/06
Panipo (Kiripaka)	„	7½	ditto	1	13′ to 20′	11′ to 20′	1 in 6	bord and pillar	1	9′ x 6′	262′	„	19,557	..	19,557	76,326	95,883									
WAIKATO DISTRICT.																										
Waikato Mine (*stopped*) ..	.. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	209,089	209,089	..	..	..	..	..	..	..	..	..
Taupiri Extended	Wight, E. S. ..	18½	brown	1	10′ to 30′	20′	1 in 10	bord and pillar	2	7′ diam. 8′ x 6′	..	..	45,408	12,100	57,508	714,619	772,127	22	71	93	steam	12″	two 7″	220′	steam	18/10/06
Taupiri Reserve	„	19½	„	1	10′ to 24′	18′	1 in 8	ditto	1	10′ x 10′	..	..	6,158	66	6,224	310,725	316,949	3	8	11	„	12″	two 5″	210′	fan	19/10/06
Ralph's Taupiri	„	16½	„	1	10′ to 50′	20′	1 in 10	„	2	9′ 6″ x 5′ 8′ 6″ diam.	..	..	68,697	20,159	88,856	384,607	473,463	31	128	159	„	12″ 24″	two 7″ 6″	190′ 260′	„	17/10/06
Taupiri South (Harrison's) ..	Duncan, J. ..	4½	„	1	18′ to 24′	12′	1 in 7	„	2	7′ x 6′ 6′ x 6′	300′ 184′	adit	3,131	..	3,131	17,542	20,673	3	2	5	horse	..	..	..	natural	9/8/06
MOKAU DISTRICT.																										
Mangapapa Mine	Lennox, W. ..	22	„	1	6′ to 8′	6′ to 8′	1 in 10	„	..	9′ x 6′	1,752′	„	4,244	..	4,244	43,755	47,999	2	11	13	„	..	..	..	furnace	31/8/06

MIRANDA DISTRICT.																																
Union Collieries	Tattley, F. J. ..	6	brown	1	57′	25′ to 30′	varied	bord and pillar	1	4′ x 4′ 6′ x 6′	90′ 333	adit	19,908	20	19,928	41,829	61,757	15	19	34	steam	12″ dup 7½″ 18″	6″ lex 5″ 6″	90′ 90′ 90′	..	7/8/06
DRURY DISTRICT.																																
Drury Mine	Holden, J. ..	2	„	..	13′ 6″	7′	1 in 6	ditto	1	6′ x 5′	610′	„	595	..	595	363	958	..	4	4	manual	..	..	..	natural	8/12/06
Output of mines included in 1905 statement whose operations are suspended																1,149,312	1,149,312															

WEST COAST DISTRICT.

TAKAKA.																																
Golden Bay (Motupipi) ..	McFarlane, Robert	2	brown	1	4′	4′	1 in 12	driving	2*	6′ x 4′ 8′ x 6′	25′ † 100′ ‡	adit	10	..	10	80	90	4	..	4	hand windlass	6″	5″	25′	natural	1/11/06
COLLINGWOOD.																																
Pakawau	McCaffrey, P. ..	1½	bitum.	1	3′ 3″	3′ 3″	1 in 3½	longwall	1‡	6′ x 5′	100′	„	741	1,174	1,915	5,354	7,269	6	10	16	steam	5¼″ × 3½″ × 5″		43′	„	27/10/06
Puponga	Taylor, A. H. ..	3	„	1	7′ to 8′	all	1 in 4	bord and pillar	..	9′ x 6′ 6″	15 ch.	engine plane	12,160	6,070	18,230	34,689	52,919	30	40	70	„	8″ 5″	4½″ 3″	200′ 120′	fan	26/10/06
Wallsend (*not at work*) ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	47,413	47,413	..	..	..	..	..	..	..	..	..
WESTPORT.																																
Seddonville State Colliery ..	Murray, Thomas	3	bitum.	1	12′	8′	variable	bord and pillar	1	6′ x 12′	150′	endless rope	36,713	..	36,713	82,030	118,743	19	71	90	steam	..	..	..	fan	30/11/06
Westport-Stockton ..	Marshall, A. G.	..	„	..	12′ to 20′	..	1 in 17	..	1‡	7′ x 10′	72 ch.	..	..	..	..	..	..	57	41	98	electric	..	..	..	„	16/11/06
Millerton, Granity	Dunn, William ..	15	„	1	4′ to 40′	12′	variable	bord and pillar	..	8′ x 7′	3,000′ ‡	..	..	..	..	..	..	..	..	..	gravita'n	..	..	..	1 Hayes fan	15/11/06
									3‡	10′ x 6′	33 ch. §	endless rope	217,265	46,736	264,001	1,772,705	2,036,706	101	307	408					1 Schiele fan	
										10′ x 6′	45 ch. ‖															
										11′ x 7′	19 ch. ¶															
Coalbrookdale, Denniston ..	Green, John ..	26	„	2	4′ to 18′	all	variable	ditto	2‡	8′ x 8′	8,146′	ditto	237,636	69,919	307,555	4,109,200	4,416,755	89	153	242	steam	6″	3″	40′	ditto	22/11/06
Ironbridge, Denniston ..	Milligan, Nicholas	15	„	1	6′ to 20′	all	variable	„	..	9′ x 5′	2,640′	„						88	256	344	„	8″ 10″	4″ 5″	40′ 15′	1 Hayes fan Schiele fan	23/11/06
									..	8′ x 6′	9,050′	„														
BULLER ROAD.																																
White Cliffs	McDonagh, J. ..	11	brown	1	18′	9′	1 in 4	„	..	10′ x 7′	250′	adit	1,012	..	1,012	2,733	3,745	..	1	1	manual	..	..	..	natural	19/12/06
Rocklands	Walker, George ..	6	„	2	10′	8′	1 in 10	„	2‡	6′ x 6′	5 ch. top mine 6½ ch. bottom mine	„	30	20	50	5,803	5,853	1	1	2	horse	..	..	..	„	19/12/06
Waitakere (*not at work*) ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	868	868	..	..	..	..	..	..	..	..	..
THREE-CHANNEL FLAT.																																
Flaxbush	Morganti, Carli ..	6	brown	2	4′ and 2′	all	1 in 1	stoping	..	6′ x 5′	1,050′	adit	1,533	..	1,533	4,078	5,611	1	3	4	manual	..	..	..	natural	18/12/06
BOATMAN'S.																																
Archer's Mine Freehold ..	..	..	bitum.	2	9′ to 11′	9′	1 in 25	bord and pillar	..	6′ x 6′	600′ 240′	„	1,800	..	1,800	8,941	10,741	..	..	3	..	..	..	..	..	14/12/06
Coghlan's Mine	Coghlan, J. ..	10	„	1	12′	8′ 6″	1 in 3	ditto	..	6′ x 4′	300′	„	55	101	156	1,608	1,764	..	1	1	manual	..	..	..	natural	14/12/06

* For air. † Air-shafts. ‡ Tunnels. § Main heading. ‖ Mine creek heading. ¶ New tunnel.

Statistics of Workings in Coal-mines, 1906—*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 1906.			Approximate Total Output to 31st December, 1905.	Approximate Total Output to 31st December, 1906.	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 DISTRICT—*continued.*													Tons.	Tons.	Tons.	Tons.	Tons.									
REEFTON.																										
Burke's Creek	Cairns, Robert ..	5	brown	1	12′	10′	1 in 6	bord and pillar	..	7′ x 6′	No. 1, 500′ No. 2, 260′ No. 3, 160′ No. 4, 140′	adit	130	..	130	5,827	5,957	1	2	3	manual	..	..	..	natural	14/12/06
Murray Creek	Billett, James ..	27	bitum.	1	12′	all	variable	open face	..	..	..	..	242	2,930	3,172	18,305	21,477	4	..	4	..	..	..	..	..	17/12/06
Phœnix and Venus, Murray Creek	Knight, John ..	25	"	2	20′	10′	1 in 1	bord and pillar	..	4′ 6″ x 5′ 6″	250′	adit	1,263	200	1,463	21,598	23,061	3	4	7	manual	..	..	..	natural	27/12/06
Waitahu	Mechen, Robert..	4	semi-bitum.	2	12′ & 6′	8′ and 5′	1 in 3	ditto	..	6′ x 8′	600′	"	288	..	288	470	758	1	1	2	"	..	..	..	"	14/12/06
Reefton	Harris, John ..	4	brown	1	10′	8′	1 in 4	"	..	6′ x 4′	600′	"	360	155	515	1,246	1,761	2	1	3	"	..	..	..	"	13/12/06
Lankey's Creek	Pascoe, Simon ..	4	semi-bitum.	1	10′	8′	1 in 25	"	..	6′ x 4′	500′	"	575	..	575	9,218	9,793	..	2	2	"	..	..	..	"	13/12/06
Progress	Kearns, R. L. ..	9	pitch	1	5′	5′	28°	stall and pillar	..	6′ x 4′	200′	level adit	..	2,957	2,957	21,190	24,147	1	5	6	"	..	..	..	"	17/12/06
GREYMOUTH.																										
Paparoa..	Watson, J. T. ..	..	..	..	..	..	..	..	..	11′ x 7′	..	..	..	..	..	..	..	160	..	160	..	..	..	..	..	11/12/06
Blackball	Leitch, Walter ..	16	bitum.	2	17′	15′	1 in 6	bord and pillar	..	9′ x 6′ 10′ x 7′	1,232′ 600′	adit	60,917	12,770	73,687	774,502	848,189	30	79	109	steam	..	..	..	fan	11/12/06
Brunner, Brunnerton ..	Coulthard, J. ..	42	"	1	10′ to 12′	all	1 in 4	ditto	..	8′ x 7′	200′	"	15,016	6,660	21,676	2,145,555	2,167,231	12	15	27	horse	..	..	..	natural	7/12/06
Tyneside, Brunnerton ..	Armstrong, James	24	"	1	12′	12′	1 in 4	"	1	10′ diameter	103′	shaft	40,241	21,306	61,547	118,346	179,893	50	120	170	steam	10″ 12″ 4″ 36″	5¼″ 7″ 6″ 8″	180′ 160′ 100′ 280′	fan	7/12/06
South Brunner (Fleming's lease)	Morgan, W. ..	1	"	1	2′ 6″	2′ 6″	40°	driving	1*	9′ x 3′	50′ (dip shaft)	adit	130	..	130	..	130	1	7	8	manual	..	..	..	natural	7/12/06
Point Elizabeth State Colliery	Herd, Joseph (mine manager); Bishop, James (general manager)	2½	"	1	8′	8′	1 in 24	bord and pillar	..	10′ x 7′	No. 1 242 yd. No. 2 264 yd.	endless rope	163,800	..	163,800	192,071	355,871	70	190	260	steam	..	..	..	fans	6/12/06
Output of mines included in 1905 statement whose operations are suspended ..																1,117,853	1,117,853									

* Underlay.

SOUTHERN DISTRICT

CANTERBURY.																											
Springfield, Springfield ..	Taylor, James ..	30	brown	1	3′ 3″	all	1 in 6	bord and pillar	2	4′ x 5′	70′	tunnel	133	..	133	89,745	89,878	..	2	2	steam	direct steam	acting	..	exhaust steam from pump	4/12/06
Springfield Fireclay Works (late Victoria Mine), Springfield	Greening, Luke ..	6	"	1	4′	"	1 in 6	longwall	1	4′ 6″ x 3′	50′	adit	17	..	17	455	472	..	2	2	horse	..	..	..	natural	4/12/06
Homebush, Glentunnel ..	Campbell, J. C. ..	34	"	1	6′ and 7′	"	1 in 3	bord and pillar	1	6′ x 6′	40 ch.	tunnel	13,491	1,935	15,426	182,776	198,202	4	41	45	horse & steam	..	..	..	furnace	21/12/06
St. Helens, White Cliffs ..	Levick, H. ..	25	"	4	8′ 4′ 6″ 3′	"	1 in 3	pillar, stope, and wall	1	4′ 6″ x 3′ 7″	90′ 5 ch.	adit	1,365	..	1,365	13,855	15,220	1	5	6	hand	..	..	..	natural	21/12/06
Mount Somers, Mount Somers	Thompson, A. ..	5	"	1	30′	10′	south 1 in 4½	bord and pillar	1	5′ x 4′	25′	"	3,088	870	3,958	16,652	20,610	2	7	9	horse	..	..	..	"	19/12/06
Woolshed Creek, Mount Somers	Harris, Thomas (permit); Doak, W. T. (secretary)	42	"	1	40′	15′	1 in 9	ditto	..	..	..	..	952	2,977	3,929	49,136	53,065	2	4	6	"	..	..	..	"	19/12/06
Albury, Albury	Willetts, G. H. (late Willetts, J. M.)	15	"	1	10′	7′	1 in 1	"	1	4′ x 3′ 6″	68′	adit	853	..	853	7,128	7,981	1	4	5	"	..	..	..	"	21/11/06
Waihao Forks, Waihao Forks	Waihao Coal Syndicate (owners), Lomas, G. (permit)	14	lignite	1	6′	5′	..	"	..	5′ x 4′	100′	"	712	..	712	1,148	1,860	4	5	9	"	..	..	..	"	22/11/06
Waihao, Waihao Forks ..	Grant, William ..	17	"	1	14′	all	..	"	..	5′ x 4′	260′	"	..	..	..	2,032	2,032	..	..	..	hand	..	..	..	"	..
Elephant Hill, Waihao Downs	Mathias, L. ..	38	brown	1	10′	8′	..	"	..	6′ x 5′	..	"	85	..	85	477	562	..	1	1	"	..	..	..	"	..
Private Pits.																										
Dalethorpe, Springfield ..	Campbell, P. ..	12	"	1	6′	all	..	..	..	..	..	..	25	..	25	343	368	..	..	..	..	..	..	..	..	..
Snowdon, Rakaia Gorge ..	Gerard, George ..	21	"	1	14′	8′	1 in 3	narrow	1	4′ x 4′	90′	shaft	..	..	..	1,808	1,808	..	..	..	hand	..	..	..	natural	..
Craigieburn, West Coast Road	Manson, D. ..	10	"	1	..	..	..	open	..	..	..	open	50	..	50	274	324	..	..	..	..	..	..	..	..	..
Christchurch Lime Company (late Springburn Lime Company), Staveley	Scott, R. L. (secretary), Christchurch	6	"	1	5″	all	vertical	levels	..	5′ x 4′	150 yd.	adit	..	..	..	901	901	..	..	..	..	..	..	..	natural	..
NORTH OTAGO.																										
Dalgety, Hakataramea ..	Drysdale, J. ..	25	"	1	30′	..	semi-vertical	bord and pillar	..	..	..	"	140	..	140	2,377	2,517	..	1	1	..	..	..	..	"	..
Wharekuri, Wharekuri ..	Shanks, A. ..	..	"	1	40′	13′	vertical	levels	..	..	..	"	258	..	258	2,028	2,286	..	2	2	..	..	..	..	"	30/10/06
Kurow, Kurow	Cairns, W. B. ..	36	"	1	irregular	..	1 in 2½	narrow	1	4′ x 3′	80′	dip incl.	..	..	..	11,395	11,395	..	..	..	..	..	..	..	"	30/11/06
Sanderson's (late Phillip's), Kurow	Sanderson, J. ..	10	"	1	indefinite	30′	vertical	stoping	1	8′ x 6′	50′	dip-drive	396	..	396	2,389	2,785	..	1	1	horse	..	..	..	"	30/11/06
St. Andrew's, Papakaio ..	Nimmo, T. ..	28	"	1	6′ 6″	6′	1 in 4	bord and pillar	1	4′ x 2′ 6″	60′	adit	1,489	..	1,489	36,492	37,981	1	4	5	"	..	..	..	"	23/11/06
Prince Alfred, Papakaio ..	Russell, Wm. (permit)	37	"	1	1′ to 9′	all	1 in 9	ditto	1	5½′ x 6′	51′	"	1,376	..	1,376	50,515	51,891	1	4	5	"	..	..	..	"	23/11/06
Ngapara, Ngapara	Nimmo, W. ..	28	"	1	25′	8′	1 in 17	"	1	4′ x 4′	50′	"	1,244	..	1,244	22,001	23,245	1	2	3	"	..	..	..	"	14/8/06
Shag Point, Shag Point ..	Hunt, William ..	36	pitch	..	2′ 6″	all	..	"	..	..	..	"	516	60	576	403,891	404,467	1	3	4	hand	..	..	..	"	2/5/06
Allandale, Shag Point ..	Westfield, C. H...	19	"	3	4′ to 6′	"	1 in 4	bord and pillar & longwall	2	10′ x 6′ 8′ x 4′	1,000′ 280′	incline tunnel	13,858	7,570	21,428	251,607	273,035	12	61	73	electric	..	..	..	fan	27/11/06
SOUTH OTAGO.																										
Fernhill, Abbotsford ..	Gray, J. ..	29	brown	1	19′	10′	1 in 10	bord and pillar	1	4½′ x 4½′	50′		353	1,122	1,475	142,396	143,871	5	5	10	horse	..	..	..	natural	14/11/06

STATISTICS of WORKINGS in COAL-MINES, 1906—*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 1906. Coal.	Output for 1906. Slack.	Output for 1906. Total.	Approximate Total Output to 31st December, 1905.	Approximate Total Output to 31st December, 1906.	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.
													Tons.	Tons.	Tons.	Tons.	Tons.									
SOUTHERN DISTRICT—*continued*.																										
SOUTH OTAGO—*continued*.																										
Freeman's, Abbotsford ..	Sneddon, J. ..	26	brown	2	7′ to 14′	6′ to 7′	1 in 7	bord and pillar	3	6′ x 5′ 7′ x 7′	1,400′ 264′	inclined drive adit	20,234	2,269	22,503	317,343	339,846	9	30	39	steam & horse	12″	5″	130′	furnace	14/11/06
Green Island, Green Island*	Barclay, W. ..	19	″	1	14′	10′	1 in 10	ditto	..	..	..	adit	550	..	550	..	550	1	3	4	horse	..	..	..	natural	..
Jubilee, Walton Park ..	Campbell, P. ..	9	″	1	12′ to 18′	8′	1 in 10	″	2	6′ x 5′	4 ch.	″	15,767	3,985	19,752	86,103	105,855	5	27	32	steam & horse	..	..	..	furnace	19/9/06
Burnweil (including Glenochiel), Saddle Hill	A. Harris..	15	″	1	20′	10′	variable	″	1	5′ x 3′	30′	incline	1,840	..	1,840	57,317	59,157	1	4	5	ditto	..	..	..	natural	19/9/06
		25	″	1	16′	7′ to 9′	1 in 9	″	3	6′ x 4′	4 ch.	tunnel														
Saddle Hill (No. 1), Saddle Hill	Ogilvie, W. W. ..	34	″	1	20′	8′ to 16′	1 in 10	″	4	5′ 10″ x 4′ 6″	264′	inclined drive adit	3,247	5,493	8,740	151,459	160,199	3	13	16	″	..	..	..	furnace	9/1/06
Saddle Hill (No. 2), Saddle Hill	Christie, James ..	5	″	1	20′	all	1 in 14	″	..	..	..		16,234	5,225	21,459	40,693	62,152	5	17	22	″	..	..	..	″	19/9/06
Mosgiel, Mosgiel	Orr, H. ..	22	″	1	8′	7′	1 in 10	″	2	4′ x 4′	14 ch.	tunnel	842	502	1,344	97,153	98,497	2	4	6	..	..	..	..	″	19/9/06
Lauriston, Brighton ..	Walker, James ..	20	″	1	6′	5′ 6″	variable	″	1	..	48′	″	249	..	249	6,514	6,763	1	2	3	horse	..	..	..	″	..
Brighton, Brighton ..	McColl, D. L. ..	18	″	1	6′	5′ 6″	″	″	..	..	..	″	256	..	256	2,013	2,269	1	1	2	″	..	..	..	″	..
Fairbairn's, Taieri Mouth ..	Fairbairn, R. ..	23	″	1	10′	8′	..	″	..	10′ x 8′	100′	tunnel	39	..	39	702	741	..	1	1	hand	..	..	..	natural	..
Bruce, Milton	Young, A. ..	39	″	1	15′	9′	1 in 8	″	..	..	..	adit	..	..	..	24,314	24,314	..	..	..	″	..	..	..	″	18/10/06
Akatore, Milton	Reid, James ..	12	″	1	14′	all	..	″	..	..	..	″	..	..	..	508	508	..	..	..	″	..	..	..	″	18/10/06
Real Mackay, Milton ..	(Lovell's Flat Coal Co.) Carruthers, James	2	″	1	8′	..	..	″	..	..	..	..	6,935	2,211	9,146	2,471	11,617	4	10	14	..	..	..	..	″	18/10/06
Bruce Railway and Coal Company, Milton	Barclay, T. ..	2	″	..	..	..	..	″	..	..	..	..	12,042	..	12,042	3,754	15,796	7	20	27	steam	..	..	..	..	18/10/06
Wallsend, Lovell's Flat ..	Hewitson, R. ..	36	lignite	1	20′	all	..	open	..	..	..	open	74	..	74	11,357	11,431	1	..	1	hand	..	..	..	..	..
Benhar, Stirling	McSkimming, P.	43	″	3	30′ in aggregate	12′	..	bord and pillar	..	4′ x 4′	..	incline	2,304	751	3,055	111,532	114,587	1	4	5	steam	..	..	..	natural	12/12/06
Mount Wallace, Stirling ..	Park, F. ..	12	″	1	14′	8′ to 10′	..	ditto	..	..	..	adit	539	159	698	5,852	6,550	..	2	2	horse	..	..	..	″	..
Taratu, Taratu	Shore, T. ..	5	brown	1	20′	8′ to 14′	1 in 10	″	..	6′ x 6′	5 ch.	″	16,149	2,378	18,527	56,373	74,900	11	29	40	oil-engine	..	..	..	″	4/10/06
Kaitangata and Castle Hill, Kaitangata	Carson, W. (N.Z. Coal and Oil Co., O. G. Lockhart, sec.)	30	″	3	50′ in aggregate	all	1 in 1½ to 1 in 4	″	..	9′ x 7′ 6′ diam.	51 ch. 360′	inclined	62509	35,311	97,820	2,002,727	2,100,547	59	272	331	steam & compressed air	2′ 6″ three pumps	6″ three pumps	280′ row pumps	fan	..
		13	″	4	50′ in aggregate	″	1 in 1½ to 1 in 4	″	..	11′ x 6′ 6″ 9′ diam.	45 ch. 526′	″									ditto	ditto	6″	500′	furnace	..
Port Arthur, Kaitangata ..	Irvine, J. ..	2	″	..	..	..	..	..	..	..	..	..	60	..	60	69	129	1	1	2	..	..	..	..	natural	..
Wangaloa, Kaitangata ..	Smith, J. ..	26	″	1	10′ 6″	8′	1 in 6	bord and pillar	..	..	..	adit	160	..	160	1,706	1,866	..	1	1	hand	..	..	..	″	..

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

Mainholm, Waipahi ..	Lischner, W. ..	21	lignite	1	15″	all	..	open	..	..	..	open	3,196	..	3,196	42,532	45,728	3	..	3	horse	centri steam-	fug dri	al ven	..	..
Private Pits.																										
Drummuir, Brighton ..	Louden, A. ..	2	brown	1	..	..	..	..	..	..	..	adit	1	..	1	40	41	..	1	1	..	..	..	..	..	..
Lakeside, Lovell's Flat ..	McGilvray, W. ..	6	"	1	..	..	..	..	..	..	..	..	29	..	29	846	875	..	..	..	..	..	..	..	..	..
CENTRAL OTAGO.																										
Coal Creek (leasehold)	Barber, J.	36	lignite	1	80′	all	..	open	..	..	..	open	2,165	..	2,165	39,400	44,040	5	..	5	horse	..	..	..	..	23/5/06
Coal Creek (freehold), Coal Creek Flat		5	"	1	..	..	..	bord and pillar	1	6′ x 7′	150′	adit	2,475	..	2,475			..	5	5	hand	..	..	..	natural	23/5/06
McPherson's, Coal Creek Flat	McPherson, A. ..	36	"	1	80′	30′ to 40′	1 in 6	open	..	..	..	open	4,836	..	4,836	39,160	43,996	6	..	6	horse	..	..	..	..	23/5/06
Perseverance, Coal Creek Flat	Craig, W. (permit)	19	"	1	99′	70′	1 in 4	open & bord & pillar	..	6′ x 7′	..	open & adit	3,373	..	3,373	33,443	36,816	4	2	6	Pelton wheel & winch	hyd jet	raul t pu	ic mp	natural	23/5/06
Alexandra, Alexandra	Mathias Bros. and Co.(owners); Hunter, A. (manager)	26	brown	1	14′	7′	1 in 7	bord and pillar	2	5′ x 2′ 6″ 6′ x 4′	60′	adit	6,010	238	6,248	50,430	56,678	2	11	13	steam	Snow pump	..	..	furnace and nat	20/12/06
Undaunted, Alexandra		7	"	1	7′	6′	1 in 7	ditto	1	5′ x 2′ 6″	70′	shaft	..	..	..	3,159	3,159	..	..	..	horse	water-	buc	ket	ural natural	..
Alexandra Coal Company, Alexandra	Pollock, J. ..	8	"	1	28′	8′	..	bord and pillar	1	6′ x 4′	60′	shaft	8,182	648	8,830	59,274	68,104	6	16	22	steam pu	three-th mp & S	row now	ram pump	steam-jet	29/9/06
Cambrian's, Cambrian's ..	Dungey, C. ..	22	lignite	1	9′	all	..	open	..	..	..	open	36	..	36	14,412	14,448	1	..	1	horse	..	..	..	..	..
Welshman's Gully, Cambrian's	McGuckin, J. ..	45	"	1	30′	all	..	"	..	..	..	"	342	..	342	32,198	32,540	2	..	2	"	..	..	..	..	25/10/06
Jones', Cambrian's	Jones, R. ..	2	"	1	..	..	..	"	..	..	..	"	..	..	..	..	..	..	..	..	..	..	..	..	..	25/10/06
Blackstone Hill, Blackstone Hill	Armitage, James	40	"	1	unknown	16′	..	"	..	..	..	"	214	..	214	4,494	4,708	1	..	1	horse	..	..	..	..	24/10/06
St. Bathan's, St. Bathan's ..	Enwright, J. ..	9	"	1	17′	all	..	"	..	..	..	"	403	..	403	3,338	3,741	2	..	2	"	..	..	..	..	24/10/06
Beck's Idaburn	Beck, W., Mrs. M. Beck (owner)	20	"	1	35′	"	..	"	..	..	..	"	1,137	..	1,137	20,116	21,253	4	..	4	"	..	..	..	..	24/10/06
McLean's, Idaburn		..	"	1	15′	"	..	"	..	..	..	"	..	..	..	1,127	1,127	..	..	..	..	..	..	..	..	24/10/06
Idaburn, Idaburn ..	White, J. ..	36	"	1	20′	"	..	"	..	..	..	"	1,170	..	1,170	36,600	37,770	2	..	2	horse	..	..	..	..	24/10/06
Border, Rough Ridge ..	Roebuck, W. (trustee), Oamaru	35	"	1	12′	"	..	"	..	..	..	"	..	..	..	7,275	7,275	..	..	..	"	two D wat	ougl er-d	as pu riven	mps,	..
Gimmerburn, Gimmerburn ..	Docherty, C. ..	50	"	1	12′	"	..	"	..	..	..	"	48	..	48	2,821	2,869	1	..	1	hand	..	..	..	..	..
Vincent, Clyde	Smith, George, Clyde Collieries Company (owners), A. E. Ackroyd (sec.), Dunedin	..	brown	2	40′	14′	1 in 2	levels	..	..	..	dip	1,469	..	1,469	20,305	21,774	2	8	10	steam	steam-driven	..	..	natural	16/8/06
Dairy Creek, Clyde		34	"	2	40′	14′	1 in 2	"	..	..	..	incline ditto	2,728	..	2,728	20,089	22,817									
Fraser's River, Clyde ..	Tippet, C. (permit)	4	"	1	6′	all	..	bord and pillar	..	5′ x 4′	..	incline tunnel	293	..	293	1,140	1,433	..	2	2	horse	siphon	..	..	natural	18/5/06
Cardrona, Cardrona ..	McDougall, R. ..	22	"	1	30′	"	vertical	open	..	..	..	open	1,744	..	1,744	18,891	20,635	7	..	7	"	..	..	..	..	11/12/06
Gibbston, Gibbston ..	Duncan, J. ..	20	"	1	30′	"	1 in 2	bord and pillar	..	..	..	adit	1,199	..	1,199	13,081	14,280	1	5	6	hand & steam	..	..	..	natural	13/12/06
Kawarau, Bannockburn	Cromwell and Bannockburn Collieries Co., T. K. Harty, managing director, Dunedin; A. S. Gillanders, mine-m'g'r.	29	"	1	10′	6′	1 in 4	bord and pillar	1	6′ x 6′	34′	incline	2,344	..	2,344	41,944	44,288	4	9	13	steam	steam-driven	..	..	"	18/5/06
Excelsior, Bannockburn		14	"	1	6′	5′	1 in 4	ditto	1	6′ x 5½′	..	"	7,128	..	7,128	31,104	38,232	4	16	20	"	ditto	..	..	"	18/5/06
Bannockburn, Bannockburn		17	"	1	6′	5′	1 in 4	"	1	6′ x 4′	20′	adit	858	..	858	16,375	17,233	..	..	..	"	"	..	..	"	18/5/06
Cairnmuir, Bannockburn ..	McCabe, J. E. (permit)	4	"	1	12′	8′	semi-vertical	level & heading	2	..	..	shaft	1,860	..	1,860	3,184	5,044	1	5	6	"	"	..	..	"	20/8/06
Nevis, Nevis	Scott, C. (permit)	13	"	1	20′	all	vertical	open	..	..	..	open	396	..	396	5,193	5,589	1	..	1	hand	..	..	..	..	19/12/06
Ryders, Nevis	Scott, C. ..	6	"	1	45′	"	"	"	..	..	..	"	81	..	81	3,136	3,217	1	..	1	"	..	..	..	..	19/12/06
Ritchie's, Nevis	Ritchie, Robert ..	4	"	1	..	..	semi-vertical	"	..	..	..	"	1,669	..	1,669	2,188	3,857	3	..	3	..	..	..	..	..	18/12/06
Ritchie's (late Graham's), Upper Nevis	Ritchie, James ..	3	"	1	..	all	..	"	..	..	..	open	..	..	..	140	140		..		..	..	..	..	..	..

Statistics of Workings in Coal-mines, 1906—*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 1906.			Approximate Total Output to 31st December, 1905.	Approximate Total Output to 31st December, 1906.	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 DISTRICT—*continued.*																										
CENTRAL OTAGO—*continued.* *Private Pits.*													Tons.	Tons.	Tons.	Tons.	Tons.									
Kyeburn, Kyeburn Diggings	Coombs, W. ..	23	brown	1	..	..	vertical	levels	..	..	..	adit	6	..	6	15,446	15,452	..	1	1	..	..	..	..	natural	..
McKnight's (late Price's), Blackstone Hill	McKnight, D. ..	9	lignite		12′	all	..	open	..	..	..	open	4	..	4	162	166	1	..	1	..	..	..	..	..	..
Angel's, Bannockburn ..	Angel, C. J. ..	4	brown	1	..	″	..	″	..	..	..	″	3	..	3	11	14	1	..	1	..	..	..	..	..	..
SOUTHLAND.																										
Pukerau, Pukerau	O'Hagan, C. ..	26	lignite	1	16′	8′ to 10′	1 in 10	bord and pillar	1	8′ x 8′	11 ch.	adit	743	..	743	32,403	33,146	1	2	3	horse	wind	mill	..	natural	18/6/06
Nelson's, Pukerau	Nelson, J. H. ..	17	″	1	16′	10′	..	ditto	..	..	..	″	252	..	252	3,382	3,634	..	1	1	hand	Doug	las	..	″	18/6/06
Hoffman's, East Gore ..	Hoffman, T. ..	1	″	1	..	..	..	..	..	..	..	..	408	..	408	..	408	..	1	1	..	..	..	..	″	13/12/06
Whiterigg, Gore	Hartley, J. (permit)	24	″	1	18′	12′	1 in 20	bord and pillar	1	6′ x 5′	2 ch.	incline tunnel	2,058	..	2,058	24,522	26,580	2	2	4	horse	Tangye	..	..	″	13/12/06
Heffernan's, East Gore ..	Burgess, W. C. (permit)	28	″	1	11′	8′	..	levels & headings	1	6′ x 5′	..	ditto	1,376	..	1,376	11,050	12,426	..	2	2	″	hand-pump	..	..	″	9/10/06
Rosedale, Gore	Mutch, A. ..	20	″	1	7′	all	..	open	..	..	..	open	944	..	944	4,103	5,047	1	..	1	″	..	..	..	..	11/9/06
Green's, Gore	Mason, J. ..	18	″	1	22′	17′	1 in 20	bord and pillar	1	10′ x 8′	5 ch.	incline tunnel	7,882	..	7,882	58,859	66,741	3	5	8	″	Tangye	..	..	natural	13/12/06
Smyth's, Gore	Smyth, John (permit)	10	″	1	20′	15′	1 in 20	ditto	..	..	..	ditto	1,141	..	1,141	7,107	8,248	1	3	4	″	..	..	..	″	13/12/06
River View, Gore	Nicol, L. D. ..	15	″	1	..	..	..	open	..	..	..	open	140	..	140	1,458	1,598	1	..	1	hand	..	..	..	..	..
Tait's Bushy Park Estate, Croydon	Jas. R. Tait and Co.	1	″	1	14′ to 20′	all	..	″	..	..	..	″	2,746	..	2,746	..	2,746	4	..	4	horse	..	..	..	..	13/12/06
Boornwell, Chatton ..	Stark, J. (permit)	7	″	1	16′	12′	1 in 10	levels & headings	..	20′ x 12′	100′	adit	4,252	..	4,252	6,928	11,180	..	5	5	″	hand-pump	..	..	natural	13/12/06
Pacey's (freehold), East Chatton	McIvor, W. (permit)	3	″	1	30′	10′ to 12′	..	open	..	..	..	open	5,126	..	5,126	17,635	22,761	5	3	8	steam	ditto	..	..	..	13/12/06
East Chatton, East Chatton	Perkins, A. ..	4	″	1	30′	20′	1 in 5	″	..	..	..	″	1,540	..	1,540	3,210	4,750	2	..	2	hand	..	..	..	..	13/12/06
Chatton, Chatton	Beath, A. ..	2	″	1	..	..	..	″	..	..	..	″	428	..	428	955	1,383	2	..	2	″	..	..	..	..	16/10/06
Thorndale, Waikaka Valley..	Raunsley, F. ..	7	″	1	10′	all	..	″	..	..	..	″	1,466	..	1,466	6,467	7,933	1	..	1	horse	..	..	..	..	9/10/06
Springvale, Waikaka Valley	McColl, D. (permit)	13	″	1	10′	all	..	″	..	..	..	″	2,576	..	2,576	12,108	14,684	2	..	2	″	..	..	..	..	10/7/06
Willow Bank, Waikaka Valley (lately Reed's)	Jones, William (permit)	10	″	1	15′	″	..	..	..	..	..	..	6,260	..	6,260	15,835	22,095	1	5	6	steam	two Do pumps	ugla	s	natural	10/9/06
Glenlee, Wendon Valley ..	McGill, D. T. (permit)	13	″	1	14′	8′	..	levels & headings	..	10′ x 8′	2 ch.	adit	734	..	734	8,531	9,265	..	1	1	..	..	..	..	″	15/10/06
McDonald's, Wendon ..	Coulter, S. (permit)	7	″	1	16′	12′	..	ditto	..	12′x 12′	..	″	3,481	..	3,481	9,818	13,299	1	3	4	steam	..	..	..	″	15/10/06
Landslip, Landslip, Waikaia	Brown, R. ..	15	″	1	18′	8′	..	″	..	..	..	incline tunnel	7,056	..	7,056	9,675	16,731	4	13	17	″	steam-driven	..	..	″	11/10/06

Kyle's (late Rear's), Landslip, Waikaia	Kyle, W. (permit)	3	lignite	1	10′	all	1 in 8	levels & headings	..	6 x 4′	..	adit	1,817	..	1,817	1,107	2,924	..	6	6	hand	..	..	..	natural	11/10/06
Rossvale (late Ross's), Landslip, Waikaia	Bond, J. (permit)	3	″	1	10′	6′	..	bord and pillar	..	6′ x 5′	..	″	2,426	..	2,426	1,292	3,718	..	6	6	″	..	..	..	″	11/10/06
Monaghan's, Landslip, Waikaia	Young, T. G. (permit)	2	″	1	7′	all	..	levels & headings	..	6′ x 4′	100′	″	1,300	..	1,300	1,377	2,677	3	..	3	″	..	..	..	″	11/10/06
Muddy Terrace, Landslip, Waikaia	Goldie, T. F. ..	4	lignite & shale	1	17′	″	..	open	..	..	..	open	3,178	..	3,178	5,066	8,244	4	..	4	horse	..	..	..	..	23/3/06
Argyle, Upper Waikaia ..	Baxter, J. and T.	15	lignite	1	10′	″	..	″	..	..	..	″	252	..	252	2,753	3,005	2	..	2	hand	..	..	..	..	22/3/06
Beer's, Mossburn	Beer, Mrs. G. (owner)	4	″	1	..	..	..	″	..	..	..	″	56	..	56	110	166	1	..	1	″	..	..	..	..	..
Radford's, Balfour	Fitzgerald, E. (owner)	2	″	..	..	..	..	″	..	..	..	″	152	..	152	10	162	1	..	1	″	..	..	..	..	..
Mataura Coal-mine, Mataura	Sleeman, C. P. ..	10	″	1	17′	all	..	″	..	..	..	″	8,215	..	8,215	86,241	94,456	7	..	7	horse	..	..	..	..	10/10/06
Boghead, Mataura	Cameron and Duncan, lessees	10	″	1	16′	″	..	″	..	..	..	″	375	..	375	5,337	5,712	4	..	4	″	Douglas water	pump - driven	..	..	10/10/06
Mataura Lignite Mine, Mataura	Coster, W. ..	30	″	1	17′	″	..	″	..	..	..	″	7,427	..	7,427	51,315	58,742	9	..	9	″	centrifugal	..	..	..	10/10/06
Waimumu, Waimumu ..	Williams, W. J.	7	″	3	6′ 10′ 6″ 5′	″	..	″	..	..	..	″	4,314	..	4,314	15,781	20,095	10	..	10	″	steam	- driven	..	..	17/10/06
Ota Creek, Wyndham ..	Shields, William	26	″	1	6′	″	..	″	..	..	..	″	350	..	350	12,824	13,174	1	..	1	″	..	..	..	..	..
Genge's, Wyndham ..	Genge, E. ..	2	″	..	..	..	..	″	..	..	..	″	497	..	497	415	912	1	..	1	″	..	..	..	..	..
Robin Hood, Pine Bush ..	Couser, William	25	″	1	15′	″	..	″	..	..	..	″	155	..	155	2,334	2,489	1	..	1	″	..	..	..	..	..
Graham's, Fairfax	Graham, P. S. ..	28	″	1	5′ 6″	″	1 in 20	bord and pillar	..	..	6 ch.	adit	529	..	529	15,247	15,776	..	2	2	hand	..	..	..	natural	..
Isla Bank, Fairfax	Slattery, M. ..	26	″	1	5′	″	..	open	..	..	..	open	..	..	..	6,665	6,665	..	..	..	″	..	..	..	..	..
Ardlowie, Fairfax	Poole, E. ..	4	″	1	..	″	..	″	..	..	..	″	147	..	147	278	425	1	..	1	″	..	..	..	..	..
Nightcaps, Nightcaps ..	Lloyd, J. ..	25	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.	open and adit	48,976	..	48,976	469,463	518,439	29	54	83	steam and horse	..	..	..	fan	14/12/06
Hit or Miss, Nightcaps ..	Tinker, W. (permit)	6	″	1	..	..	..	bord and pillar	..	..	..	adit	524	..	524	1,926	2,450	1	2	3	horse	syphon			natural	27/9/06
H.B., Nightcaps	McKenzie, D. (permit)	8	″	1	6′ 6″	all	..	open	..	..	..	open	603	..	603	4,242	4,845	2	5	7	hand	..	..	..	″	27/9/06
Morley, Nightcaps	Spence, G. R ..	3	″	1	..	″	..	″	..	..	..	″	1,167	..	1,167	2,691	3,858	2	..	2	″	..	..	..	..	27/9/06
McBride's, Nightcaps ..	Reed, W. (permit)	6	″	1	10′	″	..	..	..	..	..	..	569	..	569	4,243	4,812	1	2	3	″	..	..	..	natural	27/9/06
The Willow, Nightcaps ..	Clark, John ..	7	″	1	14′	″	..	open	..	..	..	open	330	..	330	1,471	1,801	2	..	2	″	..	..	..	..	..
Manuka Hill, Nightcaps ..	Groves, G. ..	2	″	1	..	..	..	″	..	..	..	″	256	..	256	8	264	2	..	2	″	..	..	..	..	27/9/06
Hogan's, Orepuki	Hogan, C. ..	2	lignite	..	..	..	..	″	..	..	..	″	4	..	4	16	20	1	..	1	″	..	..	..	..	..
Bush Siding, Seaward Bush	Raymond, I. W. (owner); Bowndon F. (manager)	4	brown	1	120′	all	..	″	..	..	..	″	1,240	..	1,240	1,958	3,198	3	..	3	″	..	..	..	..	29/8/06
Clifton, Clifton	Gillies, T. ..	5	″	..	..	..	..	..	..	..	..	..	..	..	..	297	297	..	..	..	″	..	..	..	..	..
Private Pits.																										
Waverley Park, Pukerau ..	Milne, James ..	5	lignite	1	7′	all	..	open	..	..	..	open	..	..	..	24	24	..	..	..	..	..	..	..	..	..
Mason's, Pukerau	Mason, A. M. W.	5	″	1	7′	″	..	″	..	..	..	″	24	..	24	82	106	..	..	..	..	..	..	..	..	..
Glover's, Pukerau	Glover, Thomas ..	9	″	..	..	..	..	″	..	..	..	″	25	..	25	134	159	..	..	..	..	..	..	..	..	..
Smith's, East Gore ..	Smith, R. ..	5	″	1	14′	all	..	″	..	..	..	″	..	..	..	44	44	..	..	..	..	..	..	..	..	..
Smith's, East Gore ..	Smith, H. ..	4	″	1	7′	″	..	″	..	..	..	″	..	..	..	47	47	..	..	..	..	..	..	..	..	..
Leitze's, Gore	Leitze, M. ..	27	″	1	4′ to 7′	″	..	″	..	..	..	″	17	..	17	1,518	1,535	..	..	..	..	..	..	..	..	..
Cross's, Otama	Cross Bros. ..	8	″	1	4′	″	..	″	..	..	..	″	13	..	13	156	169	..	..	..	..	..	..	..	..	..
Ford's, Chatton	Ford, P. ..	26	″	1	..	″	..	″	..	..	..	″	44	..	44	564	608	..	..	..	..	..	..	..	..	..
Perkins's, Wendon Valley ..	Perkins, G. A. ..	5	″	1	7′	″	..	″	..	..	..	″	6	..	6	42	48	..	..	..	..	..	..	..	..	..

STATISTICS of WORKINGS in COAL-MINES, 1906—*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 1906. Coal.	Output for 1906. Slack.	Output for 1906. Total	Approximate Total Output to 31st December, 1905.	Approximate Total Output to 31st December, 1906.	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 DISTRICT—*continued*.																										
SOUTHLAND—*continued*.													Tons.	Tons.	Tons.	Tons.	Tons.									
Radford's, Wendon ..	Scott, John, owner	16	lignite	1	20′	all	vertical	stoping	..	..	..	incline tunnel	..	..	..	4,751	4,751	..	..	..	horse	..	..	..	natural	..
Studholme's, Blackmount ..	Studholme, H. ..	..	..	..	..	..	..	..	..	..	..	..	44	..	44	14	58	..	..	..	..	..	..	..	..	..
Linwood, Te Anau	Ross and Co., D.	6	lignite	..	..	open	..	open	..	..	..	..	250	..	250	520	770	1	..	1	..	..	..	..	..	..
Wyndham, Wyndham ..	Irvine, D. ..	11	"	1	..	all	..	"	..	..	..	open	..	..	..	325	325	..	..	..	..	..	..	..	..	..
Mount Linton, Nightcaps ..	Gates & McGregor	13	brown	1	10′	8′	..	"	..	..	..	"	10	..	10	634	644	..	..	..	..	..	..	..	..	..
Output of mines included in 1905 statement, but whose operations are suspended	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1225260	..	..	..	..	..	..	..	..	..	..
Totals, Southern District, Middle Island	..	..	..	..	..	..	..	..	..	..	..	..	391,731	73,704	465435	7017463	7482898	332	799	1131						
Totals, West Coast District, Middle Island	..	..	..	..	..	..	..	..	..	..	..	..	791,917	170998	962915	10501683	11464598	731	1313	2044						
Totals, North Island	..	..	..	..	..	..	..	..	..	..	..	..	268,841	32,345	301186	3842908	4144094	111	406	517						
Grand Totals ..	..	..	..	..	..	..	..	..	..	..	..	..	1452489	277,047	1729536	21362054	23091590	1174	2518	3692						

Add output of following eleven mines, included in previous statement but now abandoned: Motupipi, 360 tons; Westport-Wallsend, 3,441 tons; Waimangaroa, 17,307 tons; Wellington, 2,299 tons; Inkerman, 2,665 tons; Inglewood, 314 tons; Devil's Creek, 343 tons; Inangahua, 71 tons; Murray's Creek No. 2, 450 tons; Burke's Creek, 300 tons; Reefton, 36 tons: total 27,586

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

23,430,955

Approximate Cost of Paper.—Preparation, not given; printing (2,400 copies), £31 3s. 6d., exclusive of illustrations.

Price 1s.] By Authority: JOHN MACKAY, Government Printer, Wellington.—1907.