1892.
NEW ZEALAND.

COAL-MINES OF NEW ZEALAND

(REPORTS ON, BY INSPECTORS OF MINES).

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

No. 1.

M. H. A. GORDON, F.G.S., Inspector of Mines, to the UNDER-SECRETARY of MINES.

SIR,— Mines Department, Wellington, 31st March, 1892.

I have the honour, in compliance with section 67 of "The Coal Mines Act, 1891," to transmit, for the information of the Hon. the Minister of Mines, my annual report on the coal-mines during the year ending the 31st December, 1891.

OUTPUT FROM THE MINES IN THE COLONY.

During last year the total output from all the mines in the colony was 666,276 tons. Of this quantity 104,064 tons is from mines in the North Island and 558,212 tons from mines in the Middle Island; but there is included in the table annexed 6,518 tons which was omitted from the previous year's statement through the mine owners having failed to forward the returns in time for publication; therefore the table shows the output for this year as 668,794 tons, or an increase over the former year's output of 31,397 tons; but had all the returns for 1890 come to hand, the output for that year should have been 643,915 tons instead of 637,397, as was shown for that year. Therefore the actual increased output last year was only 22,361 tons over the output for the former year.

ACCIDENTS IN MINES.

There were no accidents last year in the North Island mines, but there were seventeen in the coal-mines in the Middle Island. Nine of these occurred in the Coalbrookdale Mine—namely, five accidents below ground and four above ground; two in the Brunner Mine, two in the Kaitangata Mine, and one each in the Waimangaroa, Shag Point, Coal Creek, and Coal-pit Heath Mines, which resulted in four of them being fatal. Three of these were in the West Coast mines—namely, Brunner, Coalbrookdale, and Coal-pit Heath, and one at Coal Creek in Otago. Three men got their legs broke and one man got his arm broke. The rest of the accidents were not of a serious character. No blame can be attached to any one in connection with these accidents, with the exception of the one occurring to Thomas Kennedy. A great deal of carelessness is displayed by the workmen themselves, and in some instances they are foolhardy, running into danger when a little forethought would have prevented it. The large number of accidents at the Coalbrookdale Mine is most likely due to inexperienced men being about the mines, who, in many instances, will not carry out the instructions given them with regard to carrying on the mining operations with safety; and unless the miners themselves strictly adhere to the rules for the working of the mines it is impossible for the Inspectors to guard against an immunity of accidents.

The following are the mines personally inspected by me:—

MOKAU.

The system of working the coal in the Mokau Mine is greatly improved since my previous visit of inspection. The main heading is carried through the solid coal, and the ventilation is good. The Act is not strictly complied with in every respect in regard to having plans of the workings at the mine, but a survey of the workings has been made, and a plan is in course of preparation. The coal is getting much harder and of better quality as the workings get further underneath the hill. On my previous visit there was a band of shale in the centre of the seam from 2ft. to 2ft. 6in. in thickness, but this is gradually getting thinner, and is likely to cut out altogether as the workings go under the hill. The average number of men employed in and about the mine for the past year has been about nine, and the output of coal has been 2,773 tons. On examining the company's books at their office at New Plymouth I find that 1,072 tons of coal have been sold from the mine between the 1st October, 1891, and the 31st March, 1892, but the company had not paid any contribution

to either the Sick and Accident Fund or Coal-miners' Relief Fund; but Mr. Richmond, who represents the company, promised that a contribution of one farthing per ton would be paid on output between the dates mentioned, which will amount to £1 2s. 4d.

Co-operative Mine.—There is no work being carried on in this mine. The Co-operative Company is said to be in liquidation. Two openings have been made into the hill, one about one mile further up the river than the Mokau Mine, and one on the opposite side of the river from the said mine. As there was no one about the mine, and all workings had been suspended for some time, and having no safety-lamp with me, I could not inspect these workings, but from information supplied me, there will have to be strict supervision if ever these workings be opened again. During last year there was an output of 940 tons. At the time when the workings were carried on there were about twenty-eight men employed.

Black Ball Mine.—This company has constructed an adit-level for 1,340ft., its dimensions being 9ft. wide by 6ft. 6in. in height. The adit is carried for about 100ft. in the coal, which is about 12ft. in thickness. There was no work at this mine at the time of my visit in December last, but since then a company has been formed in London to work it. The adit-level is well constructed and timbered, and the coal is of the finest quality in the colony. As soon as a connection is made to get the coal to the railway at Nelson Creek this will be a valuable property.

I have, &c.,

HENRY A. GORDON, M.A.Inst.M.E., Inspector of Mines.

The Under-Secretary, Mines Department, Wellington.

No. 2.

Mr. G. WILSON, Inspector of Mines, to the UNDER-SECRETARY of MINES, Wellington.

SIR,— Inspector of Mines Office, Thames, 1st April, 1892.

I have the honour to transmit to the Hon. the Minister of Mines the following report on coal-mines in the Auckland district made in compliance with section 67 of "The Coal-mines Act, 1891":—

KAWAKAWA DISTRICT.

1. *Kawakawa Mine.*—The workings in this mine during last year have been chiefly of the same nature as in the previous year—taking out pillars towards the entrance to the incline. The quantity of coal available in this part of the mine is estimated to be sufficient to last for another three months. The manager intends, however, to sink a shaft on the hill, under which a considerable quantity of coal is said to have been left when that part of the mine was worked many years ago. If the quantity of coal left there is of any great extent, it may be sufficient to enable the manager to continue the output of coal during the whole of the present year. As the workings were chiefly towards the outcrop, it was found unnecessary to continue pumping operations, and the pumps are therefore to be drawn and the whole of the machinery removed from the shaft. The work of taking out the pillars has been very carefully carried out under the supervision of Mr. Swinbanks, the deputy. The report-books are well kept and the provisions of the Act complied with. There are twenty-nine men and five youths employed below ground and twenty-seven men on the surface, including those employed in connection with the haulage, timber-getters, engineers, engine-drivers, and the manager: total, sixty-one. The output for the year was 28,254 tons.

HIKURANGI DISTRICT.

2. *West Bryans Mine.*—This mine is worked by the owner, Mr. Charles Smith. The chief portion of the support has been household coal. The distance to the Kamo Railway-station and the cost of carriage have prevented any great quantity being used for steam purposes. The mine is safely worked, four men being employed. A copy of the plan of the workings has been received by me as provided in section 45 of "The Coal-mines Act, 1891." The total output for the year was 576 tons.

3. *Walton and Graham's Mine.*—This mine has not been worked during the year.

WHANGAREI DISTRICT.

4. *Kamo Mine.*—The workings in this mine were carried on on No. 2 seam, but work was, however, suspended on the 21st September in consequence of a creep. This creep or land-weight pressure commenced on No. 2. seam, between the incline and the air-shaft, and covers, as far as can be estimated, an area of about 750ft. by 500ft. The chief falls and crushes took place where the No. 1 and No. 2 seams had both been worked. The average depth between those seams is about 25ft., composed of fireclay and sandstone, sometime of a soft nature and a varying thickness of each. The old workings on the No. 2 seam were irregular, the bords being 10ft. in width, and the pillars 33ft. by 27ft., 35ft. by 30ft., 35ft. by 34ft., 37ft. by 41ft., 33ft. by 25ft., 26ft. by 25ft., 27ft. by 30ft., 40ft. by 35ft., and 42ft. by 35ft., extending over the area of the creep. The workings on No. 1 seam over the same area were also irregular, but the pillars were much larger; the bords were 11ft. in width, and the pillars 63ft. by 52ft., 80ft. by 60ft., 80ft. by 50ft., 85ft. by 50ft., 65ft. by 40ft., 55ft. by 45ft., 53ft. by 43ft., 47ft. by 43ft., and 60ft. by 42ft. The depth from the surface is about 200ft., and the roof over the coal is in most cases of a firm nature; green and mottled sandstones for about half the distance, the remainder of the cover from the sandstone to the surface is of such a nature as to give very little support, and the subsidence is shown by cracks on the surface. The coal in both seams is of a tender nature and the pillars were crushed, so that the whole of the workings was filled up. The subsidence will have no great effect in depression on the surface, as not more than one-fourth of the coal in both seams has been removed, which would leave only about 4ft. of space to be filled up. The manager is of opinion that the whole area

of the creep will soon settle, so as to enable him to reopen the incline through the crushed ground. The work has been commenced and is being now carried on. The incline is timbered with strong sets of puriri timber, well secured and stayed, and the whole close slabbed. It will, however, take some time to complete the work to the place in the incline near the place where the creep commenced, beyond which the workings are intact. Working at all the places can be resumed as soon as the new road is open. The incline drive is ventilated by air-pipes conveying the air from the intake to the faces, but although a good current is passing through, the air soon becomes hot, and communication with open workings must be effected to provide ventilation as it was before the creep took place. A copy of the plan of the workings of the mine has been sent to me as provided in section 45 of "The Coal-mines Act, 1891." The report-book is well kept and the provisions of the Act fully complied with. The cages are now fitted with the appliances required by section 23 of the general rules. An average of sixty-eight men is employed, fifty-eight underground, and ten on the surface. In consequence of suspension of coal-getting when the creep took place the output for the last quarter of the year was only 108 tons. Total output for the year, 15,652 tons.

WAIKATO DISTRICT.

5. *Waikato Mine.*—This mine, which is situated on the left bank of the Waikato River, and on the opposite side to the railway, is worked from an adit level, where there is no expense in hoisting or pumping. The cost of conveying the coal on punts to the railway-siding is, however, a drawback, and the quantity produced is therefore limited. The workings were safely carried on, and during the year confined to headings and bords, no pillars being taken out. The ventilation is fairly good, although at times a change of wind causes a stagnation, which soon disappears. The books are well kept, and the Act complied with. A copy of the plan of the workings of the mine has been sent to me, as required by the Act. The number of men employed is eight on the surface and on steamer and punts, and nineteen below ground: total, twenty-seven. The output for the year was 4,839 tons.

6. *Ralph's Taupiri Mine.*—The workings in this mine during the year have been: driving the new dip, removing a pillar in the old mine which was under the place where the hauling-engine formerly stood, and sinking a shaft. It was found that, on account of the quantity of water in the new dip, it would be more economical to work the mine by sinking a shaft on the land between the railway and the Waikato River; the dip was therefore abandoned, and the timber drawn. The shaft was then sunk to a depth of 160ft., and through a seam of coal 65ft. in thickness. The cover over the coal was of such a nature that no difficulty was experienced in sinking, as the running drift, found elsewhere in the neighbourhood, did not exist in the shaft. A bore-hole was made near by, and a working shaft about 10ft. by 6ft. is to be sunk with as little delay as possible. The first shaft will be used as a pumping and upcast shaft. At my visit to the mine on the 10th December, I found that no cages were used, and that men were raised and lowered by the engines without being securely stayed to the rope, as provided in section 25 of the general rules. I instructed the manager to see that this precaution was taken in future, and to make the entries in the report-book in a more systematic manner. The provisions of the Act were otherwise fairly well complied with. The average number of men employed was six on the surface, including manager and engineers, and ten men below ground: total, sixteen. The total output for the year was 2,079 tons.

7. *Taupiri Extended Mine.*—The workings in this mine during the year were driving headings and opening fresh bords to the southward, driving a heading to the northward to connect with the second shaft, which was sunk about 10 chains from the main working-shaft. The second shaft, which is 10ft. in diameter, sheathed with cast-iron cylinders, was sunk with considerable difficulty on account of the sandy drift and quantity of water to be contended with. Bore-holes had been made in a circle from the surface down to the coal, and it was found that no obstacles were in the way, as was the case in sinking the main shaft, when trees and branches in the drift caused great delay. Provision was made to put on great pressure to force down the cylinders, which were in segments and built in the top, while the sand and drift were removed by a dredging-machine. No water was pumped from the shaft until the coal had been reached, when a Tangye pump was used to keep the shaft dry whilst the coal was sunk through and the shaft bricked-up. Connection was made with the heading-drive from the main shaft on the day previous to my visit on the 11th December last. The depth of the second shaft is 204ft., the coal being 24ft. in thickness, and as the main shaft is only 174ft. in depth the pumping will be from the deepest one. The ventilation of the mine is good, the fan being still used: 9,070 cubic feet of air per minute was passing through the working places at the time of my last visit for the use of fifty men and one horse below ground. From the 20th September until the second opening was made the mine was worked in shifts in order that not more than ten men were taken below at one time. The report-books are well kept, and the provisions of the Act complied with. A copy of the plan of the workings of the mine has been sent to me as required by the Act. The number of men employed was sixteen on the surface and fifty below ground: total sixty-six. The output for the year was 29,460 tons.

8. *Taupiri Reserve Mine.*—The workings in this mine for the year have been under the Lake Kimihia. A series of bore-holes have been made, showing the depth of the cover, which is from 48ft. to 77ft. in thickness, chiefly strong fireclay. The bords are worked 14ft. in width, and the pillars are 21ft. in thickness. The height of coal worked is 13ft., and not less than 5ft. of coal left for a roof. It may therefore be considered that there is no special danger in working under the lake so long as the thickness of the cover mentioned continues and the pillars are not interfered with. Thirty-seven men are employed at the mine, seven on the surface and thirty below ground. The ventilation was good; 4,408 cubic feet of air per minute passes through the workings, giving 116 cubic feet per minute for thirty-seven men and one horse working in the mine. The report-book is well kept, and a copy of the plan of the workings of the mine has been sent to me as required by section 45, and the other provisions of the Act complied with. The output for the year was 17,221 tons.

9. *Miranda Mine.*—The working of this mine was carried on with very few men until September last, when work was discontinued and the mine shut down, and the late manager wrote informing me that the shaft was well and securely covered. There were five men on the surface and five men below ground up to the time operations ceased. The total output for the year was 2,280 tons.

ACCIDENTS.

No accidents have been reported to me during the year.

The charge of negligence against the late manager of Ralph's Mine, referred to in my last year's report as being *sub judice*, resulted in a conviction.

REMARKS.

The output of coal from Kawakawa cannot continue much longer, as only a few old pillars are available, and the result of boring in the district has been that no extensive deposit of coal was found. The coalfield at Hikurangi is extensive, and the seams can be easily worked; it may therefore be anticipated that when the Whangarei–Kamo Railway is completed to Hikurangi mining operations will result in a large output, as this coal is suitable for ocean-going steamers as well as being a good household coal. Boring operations at Kamo have shown that 1,200 feet to the eastward of the shaft the upper seam is 12ft. in thickness and the lower seam 11ft. 6in., so there is every probability of a continuance of the output from this mine.

In the Waikato district the available coal is sufficient to supply the demand for this class of coal, and no great increase in the output may be looked for, as the market is chiefly in the Auckland district.

A seam of brown coal was discovered at Waitakaruru, within two miles and a half of the Miranda Creek, on the west side of the Firth of Thames, and about twelve miles from Grahamstown. The owners are about to commence operations in exploring the seam with a view to opening a mine.

I have examined the books of the owners of the mines, and have ascertained from the proper officers of the Post Office Savings Banks, that the amounts were paid to the Sick and Accident Fund, as shown in the following statement:—

Name of Mine.	Number of Tons of Coal sold for Quarter ending 31st December, 1891.	Rate per Ton.	Amount paid.	Name of Post Office.
		d.	£ s. d.	
Kawakawa	5,927	½	12 6 11	Kawakawa
West Bryans	236	¼	0 5 9	Kamo
Kamo	108	¼	0 2 3	Kamo
Waikato	2,102	¼	2 3 9	Huntly
Ralph's	728	¼	0 15 2	Huntly
Taupiri Extended	7,553	¼	7 17 4	Huntly
Taupiri Reserves	3,869	¼	4 0 7	Huntly
			£27 11 9	

I have, &c.,
GEO. WILSON, Inspector of Mines.

The Under-Secretary, Mines Department, Wellington.

No. 3.

NORTH ISLAND.

Mr. N. D. COCHRANE, Inspector of Mines, to the UNDER-SECRETARY of MINES, Wellington.

SIR,— Westport, 31st March, 1892.

I have the honour, in compliance with section 67 of "The Coal-mines Act, 1891," to report as follows for the information of the Hon. the Minister of Mines:—

Taupiri Extended Colliery (6th July).—The workings of this mine are adjacent to Lake Hakanoa, the face of the main heading being about 1 chain distant from the edge of the lake, but it is not working at present. Mr. Tatley informs me that there is 120ft. of cover, and holes are drilled in the roof to insure a thickness of 4ft. of coal being left. Coal is also left on the floor, except in one or two places. The thickness of the coal varies from 22ft. to 48ft., and it stands very well. Safety-catches and detaching-hook are fitted up, and the general rules posted, but without the required names; this will be seen to. Reports and register kept, and plan shown to be made up by survey-book, but will in future be dated. Machinery and head-gear for sinking a shaft to provide a second outlet have been fitted up, and sinking will be started when the cylinders arrive. As forty-three men are employed, I notified Mr. Scherff, the secretary of the company, that it would be necessary either to have the connection made by the end of September or to reduce the number of men to what the Act permits. This was allowing eighteen months from the time of starting, as provided by the Act of 1886, instead of a year, to which the period had been reduced by the Amendment Act of 1890. As the company had sunk their first shaft and started

operations under the former Act, not only would it have been unfair, as already pointed out by Mr. Gordon in last year's report, to have compelled them to comply with the Amendment Act, but would probably have resulted in a claim for compensation.

Waikato Colliery (7th July).—This mine employs twenty-one men underground. The places are all driven on bearings, but the plan is only in pencil, and undated. This will be seen to. In the working places to the east of the top of main jig the air is poor, but screens are to be put in, which will improve it.

Tuapiri Reserve Colliery (8th July).—The workings in this mine are principally under Lake Kimihia. All the bords are driven on bearings, and kept very regular. In most places there is a coal floor left, and I am informed by Mr. Harrison that there is never less than 4ft. of coal-roof. At the west level face there is a trickle of water, which keeps with the advanced faces. I could see further back where such had been running and had now ceased. The dip is to north-west, at one in five, so that as the workings progress under the lake additional cover is gained. Reports kept. Special and general rules posted. Plan up to date, and air good.

Ralph's Taupiri Mine (8th July).—Only two men employed, at pillar-work near the out-crop. General and special rules hung, the latter without the required names. I requested Mr. Ralph to see to this. Shaft unfenced. This was atttended to at once.

Miranda Mine (9th July).—This is a very thick coal seam, running up to 50ft., and adjoining swamp land, from which it dips, so that working to the rise is inadmissible. Only five men were working at the time of my inspection. Neither special nor general rules hung up. Plan undated. Report not kept. I requested Mr. Snow to attend to these, also to look places with safety-lamp, and to provide bars at landings and jump-up. There was a good current of air, but a lot of it was lost before reaching the men.

GENERAL.

In such workings as the Taupiri Reserve, Taupiri Extended, and Miranda Mines, adjacent to or underneath lakes, in spite of all precautions, there is a risk of inundation. The roof appears to be carefully watched, and so far a large area of fireclay floor has not been exposed. There still remains the possibility of striking a fissure or fault, which may serve as a channel for the water overhead to reach the workings. This will require the greatest care to be exercised, and at present this appears to be done.

I have, &c.,
N. D. COCHRANE, Inspector of Mines.

The Under-Secretary, Mines Department, Wellington.

SOUTH ISLAND.

Mr. N. D. COCHRANE, Inspector of Mines, to the UNDER-SECRETARY of MINES, Wellington.

SIR,— Westport, 31st March, 1892.

I have the honour, in compliance with section 67 of "The Coal-mines Act, 1891," to report as follows for the information of the Hon. Minister of Mines, and to attach list of accidents and table of statistics for the West Coast coal-mines :—

Wallsend Colliery, Collingwood (27th July).—There were seven faces in this mine working one shift, and the dip was working three shifts, employing a total of twenty-four men at the time of my visit. The seam is thin, and the workings scattered for long-wall. The air in the face next to the level in No. 1 seam was dull, but the place would be holed through in a few days, when this would be remedied. Manager's name and rules at mine-mouth illegible; no copy of Act at mine, and plan not made up to date. These will be attended to.

Motupipi Bridge Mine, Takaka (29th July).—Three drives from the river-bank, evidently not worked for some time, in a seam of the following section: Coal 2ft., sand 1ft. 9in., coal 2ft. 6in. The laths were not strong enough; cautioned Mr. Manson if work should be resumed.

Simpson's Mine, Takaka (29th July).—Merely a prospecting-cut into outcrop, which was being taken in 12ft. wide, with the view of getting as much coal as possible. Width is to be reduced.

Brownville Coal-mine, Takaka (29th July).—This drive is only a few yards in, in proximity to old workings. It adjoins the opencast workings on the beach, which were under water when I passed. I have notified the owner as to the advisability of having a practical miner in such ground.

Mokihinui Colliery, Mokihinui (6th April).—The workings were in what is known as the big seam, employing twenty-two men in two shifts. Air dull in some of the faces; roof not very good, but sufficient timber; no special rules; manager's name not posted; and a bar required at blind shaft. (16th November): A down-throw fault with vertical shear, met with in the dip-drive, has been cut, and the coal struck on the south-east side. Three faces are opening up here. Requirements as to special rules, manager's name, and blind shaft, have been attended to. The plan is kept well posted by Mr. Shaw. A ventilating-furnace has been put in, and a system of steam-haulage fitted up with an engine recovered from the s.s. "Lawrence," which was unfortunately lost at the entrance of the river, during the year. The full thickness of the seam has been used to construct bins capable of holding 500 tons. The full benefit of these improvements can only be experienced when railway connection is established.

Ngakawau Coal-mine, Ngakawau (17th November).—The workings on the level of the railway have been abandoned, as the seam was found too thin when followed to the dip. The prospecting, from the plans shown me, does not appear commensurate with the surface outlay. However, a number of sections have been run and a route fixed on for an incline-tramway to convey the coal from the plateau, where Mr. Broome, who is now in charge, informs me a large coal-bearing area exists, under favourable conditions for working. Operations are to be started shortly. This company put in a prospecting-drive at Fairdown (11th July) for some 300ft., but no coal-seam was met with, the ground being still broken when driving was stopped.

Coalbrookdale Colliery.—(6th January): The dip-workings are in the upper seam, the lower seam being only cut into at two places. Roof flaky sandstone, but timbering ample. Air good, drawing out to different openings on the side of the hill. A shaft is being sunk at the extreme south-west end of the workings, to serve both for pumping and up-cast. This was completed on the date of my next inspection, 10th April, and circulating 14,400 cubic feet of air. The rise-workings are on the east side of the engine-plane. The roof is bad, at places close-lathed; plenty of timber supplied. The dip, which throughout has been variable, changes to due east after meeting some faults, with which this section is more troubled than others. In the Ironbridge section, in addition to natural ventilation, a steam jet and pipes are used. The coal runs up to 21ft. thick, and some pillar-work is being done. In October this section was not doing much, pending extension of the haulage-rope. Roof bad at one or two places, but plenty of timber, also sprays in general well set. (6th November): The dip-workings still principally in upper seam, and roof inclined to flake, but timber kept well forward. No operations are being carried on in the rise-workings at present, but two dip-drives are started to go in the direction of Cascade Creek. Reports and register duly kept. Plan of part of the workings behind in December, but the survey has been made. New general rules with names posted up. A most unfavourable feature about the surface-works at Coalbrookdale is that the engine-plane, on which the endless rope and trucks are moving, is used as a travelling-road. A number of houses are built along this line, and not only the miners but the women and children travel along it, as there is no other road.

Granity Creek Coal-mine.—Through the courtesy of Mr. Jamieson, of the Westport Company, I was present when the first shot was fired on the 28th November. The tunnel will be 10 chains in length, rising at 1 in 3·643, and it is intended to lower the coal from the plateau by the endless-rope system in two stages, in the lower of which the vertical rise will be 850ft., and in the upper 700ft.

Waimangaroa Coal-mine.—(4th February): The coal in this mine is of a very soft nature, and the inclination is steep. It had been said to be only a slip from the plateau, and the convergence of the roof and pavement at the faces was causing some doubt as to its continuity. I saw no reason why the seam should not be continuous, as the measures are unbroken, though tilted, and on my last visit, I am glad to say, the thickness had increased to over 20ft. I found four levels being driven from the outcrop, and the coal between them formed into pillars. A little gas given off at times. No reports nor plan, but Mr. Elliott, the new manager, promised to have these attended to. (2nd June): Fifteen men working in No. 2 and 4 levels. Air poor. No gas. Opening in foot of No. 4 level, which I requested to be secured. Reports and register kept. Barometer and thermometer procured. Copy of Act and special rules hung up. Plan not yet made. (8th September): To my surprise I found there was no manager, Mr. Elliott having left the preceding day. Mr. Wm. Young, the former deputy, was in charge. Timber in one or two places requiring renewal. Plan up to June, and opening in No. 4 seen to. Air in faces of No. 4 level dull, and 1 per cent. firedamp showing in one place with the indicator. I cautioned Mr. Young, and on my return to Westport notified the secretary as to the ventilation, and certificated manager. I was asked to grant an exemption, but declined, so Mr Elliott was reinstated before the three days had expired. Bins have been erected, capable of holding 1,500 tons, but the company find a difficulty in establishing a regular trade. The very soft nature of the coal, the dust, and presence of gas, in this and the Wellington Mine will require great care in the management.

Wellington Coal-mine.—(2nd February): Reopening. (2nd June): Black damp present, which extinguished our lamps. (3rd June): Black damp still present, and a hand-fan forcing air to a face which was being driven to connect with another opening from the surface. The lights were again extinguished, and the place was very low. On reaching the face I found a miner with his safety-lamp burning fairly well. To have insisted on a good current of air would have resulted in closing the mine. The places were holed through three days later. (8th September): Not working. Air poor, and no firedamp.

Whitecliffs Coal-mine.—This is only a short drive from an outcrop to supply the dredge, and is not likely to be continued.

Murray Creek Coal-mine.—(2nd March): Only one man working. Air good, report kept, places examined with safety-lamp every morning, and copy of Act at mine-mouth. Some ugly holes in roof, to which I directed Mr. Saia's attention. (19th June): Places near fault irregular and too wide. (13th October): Mine in good order.

Golden Treasure Coal-mine.—(2nd March): Air good, gas never seen, but places are looked at with safety-lamp. (19th June): A new drive to the north of Fox's old workings, employing three men. (10th October): Only Mr. King working. Good current of air, shoot which was being sunk to old workings completed.

Inkermann Coal-mine (31st October).—This mine has been idle most of the year. Air good, and second outlet to surface. Timber in level and where I could get at it in the slopes good; but too much ground standing on timber, although some filling-in has been done. I discussed the matter with Mr. McCallum, who wrote before I had time to revisit the mine that all the worked ground had been filled in.

Lankey's Gully Coal-mine.—(3rd March): Timbering insufficient, and mine not looking in good order. Mr. Lamberton stated he had had a struggle with soft coal, and if I insisted on timbering he would have to close the mine. Revisited (8th May): Same as formerly, so I wrote Mr. Lamberton that it must be properly timbered and secured if work was to be continued therein. (21st October): New drive working in same seam; coal still soft, but mine in better condition than old drives.

Phœnix Coal-mine.—(19th June): Two men and a boy working. Air sufficient. Roof where working all right. (13th October): Drive requires timbering near the mouth; Mr. McMurtrie will see to it.

Inglewood Coal-mine (13th October).—Work has only lately been resumed at this mine. Instructed Mr. Reargh to get new Act and safety-lamp.

Progress Coal-mine.—(23rd February): A slight show of gas was seen six months ago, so places are looked at every morning with safety-lamp. Wrote Mr. Brennan to provide a more efficient one. (17th October): Not working to-day. Roof bad, and coal thrown back in drive to be taken away as required. New safety-lamp not yet supplied. Wrote Mr. Brennan as to this and condition of mine.

Supreme Coal-mine.—Not inspected, as it has not been working this year.

Sir Francis Drake Coal-mine (31st October).—No one about. Work principally opencast.

Devil's Creek Coal-mine.—(28th February): Timbering in longer dip drive bad, but will be attended to if work goes on. (11th August): Found this mine had taken fire, probably through large quantity of slack. Manager agreed to block off mine-mouths to cut off air. This was done when inspected in October, and shaft which was uncovered was to be seen to.

Inangahua Coal-mine.—This adjoins Devil's Creek Mine, and Mr. Rutherford wrote in July complaining of the water from that mine being dammed back on him. I wrote from Wellington pointing out his remedy. (11th August): Shaft unfenced; attended to at once. Mr. Rutherford feared that the fire in adjoining ground would spread to his ground. I advised him to take out a strip of coal down to the level of the water and let down the roof.

Energetic Coal-mine (19th June).—Only two drives, which are well timbered. Ground bad. Subsequently abandoned.

Coghlan's Coal-mine.—(18th June). No sprags used, and air warm. (19th October): Still no sprags, and workings on south-west side too wide. These will be attended to.

Burke's Creek Coal-mine (19th October).—Two shafts and a dip-drive, the latter worked by water-balance. Both shafts uncovered, but will be seen to. Not working at present, as troubled with water.

Brunner Colliery.—(9th January): A fatal accident had occurred the previous day; it is referred to under the head of accidents. Workings confined to taking out pillars. Eleven thousand cubic feet of air circulating. This was considerably increased when I next inspected the mine in April. Reports kept and the Act observed. (30th September): A dip-drive and a few places off it are now working in the solid. Air here and at upper-pillar workings dull. Supposed inlets near fireclay-workings are to be seen to. On 30th October I note: "Pillar-workings where dull at last visit have air improved, and an overcast has been put in from dip-workings over level." Props at one or two places not well set, but plenty of timber. The north Brunner section, on the opposite side of the anticline from the other workings, is now opening. This mine was also inspected on the 4th December. Plan up to July. During the year Mr. Hodgson has been appointed mine-manager, Mr. Bishop taking the position of managing engineer. An electric plant has been fitted up for the transmission of power from the surface to the top of the dip-workings underground, where it is used to draw water in tanks from the dip. Also, a dross-washing and briquette-making plant has been erected, which has proved a success, and it is intended to recover the by-products of the coke, and to use them in the manufacture of the briquettes.

Coal-pit Heath Colliery.—(10th January): Worked from a dip-drive entering near the Brunner Mine mouth. Pillar-working similar to the Brunner Mine. A good few of the props giving, but these are being renewed where necessary. A good current of air, and, when inspected in April, 22,600 cubic feet per minute circulating, which, although a reduction, was still ample for the number of men (fifty-two) employed per shift. (30th September): Number of men increased to seventy-three and current to 28,100 cubic feet. Coal usually well spragged and propped. Air at return part of workings not very good, but to be rearranged to improve this. (3rd December): Air better than at last visit; a good current at every face. A little gas has been showing recently at one face. Reports kept; special and general rules, with required names, posted. Plan up to date.

Nine-mile Coal-mine (4th May).—Only two short drives in a 4ft. thick seam at Point Elizabeth. The roof is sound, but the Act is not observed. If the coal should be taken out extensively it will probably bring down a large slip on the beach unless proper support is left.

Blackball Coal-mine.—(20th February): This is an adit 1,170ft. long, driven to cut the coal which is expected to be met shortly. The ventilation is by furnace, the drive being wide enough to admit of two airways. Approved safety-lamps on hand. Fourteen men employed in all. (16th June): The coal was struck at 1,250ft., and there are two seams, 4ft. and 12ft. in thickness. Air good. No gas has yet been seen. Very well timbered. Report-book kept. I have since been informed that operations have been stopped pending railway connection. As a considerable area lies to the rise, at an angle of 1 in 5, there will be no charge for pumping, haulage will be done at a minimum, and the coal is said to be of excellent quality, so that this mine should have a good future when some means of taking away the coal is established.

Stillwater Lease (1st October).—Nothing further has been done at these drives, which have now caved in. The coal-seam, I am informed by Mr. Joseph Taylor, was highly inclined and very thin.

General.

All the working mines which have not certificated managers are under charge of managers holding permits, as provided by "The Coal-mines Act, 1891."

Henry Nuttall, trucker in the Brunner Mine, at the inquest on the death of Thomas Kennedy, showed complete ignorance of the special rules, and although he had changed places out of kindness to Kennedy, whose death resulted from his own act, it was desirable in the interests of safety, and also if the special rules were not to become a dead letter, that he should be prosecuted. The case was tried before Major Keddell, and Nuttall fined 10s. and costs for breach of special rule 46—absence from his post. Convictions have also been secured during the year by the Grey Valley Company for not spragging, and by the Westport Coal Company for riding on the trucks on the incline.

ACCIDENT LIST.

1. On the 8th January, 1891, at the Brunner Colliery, one of the new hands, named Thomas Kennedy, employed as a miner, having changed places with a trucker named Nuttall, placed a prop the wrong way in a truck, so that it came in contact with the roof, breaking the chain. There was ample room for Kennedy to stand clear, but he appears to have made a spring down the incline, and was run over by the truck. He died immediately afterwards. He had previously been employed as trucker, but Nuttall had no right to change places with him.

2. On the 9th February, at the Waimangaroa Mine, a miner named John Hollows got burned by a slight explosion. He was working with a safety-lamp, but had left a candle in the level, at which the gas ignited. The place had been inspected before he entered it, and found clear.

3. On the 6th June, in the Brunner Mine, John Henderson left his place to borrow an axe, and in going up an incline got crushed about the hips by a passing truck. Fortunately it did not turn out a serious accident.

4. On the 20th July Henry Jones was killed in the Ironbridge section of the Coalbrookdale Mine by a truck running away through a chain breaking. The truck was being lowered at the time, so he should have been standing clear. As I was absent at Mahakipawa, the inquest was attended by the constable on behalf of the Mines Department.

5. On the 3rd August a miner named Richard Mackie received a scalp-wound when taking down head-coal in the Ironbridge section of the Coalbrookdale Mine.

6. On the 7th October a miner named Henry Dillnot had his leg broken when taking down some loose coal, after firing a shot, in the Ironbridge section of Coalbrookdale Mine.

7. On the first December a miner named William Dixon was killed by a fall of coal in the Coal-pit Heath Mine. He was going for a crowbar to prize down some coal which had been loosened by a shot, and passed close by it, when it came away and crushed him. There was plenty of room to pass clear, but he had taken the shortest road.

8. On the 15th December, at Coalbrookdale Mine, two miners named Charles Prince and Edward Wrixon having lighted their fuse and retired, on hearing a report returned to their face, when the charge went off, burning Prince on the face and arm and Wrixon slightly on the forehead. They state they were not attempting to draw a shot which had missed fire, so they must either have mistaken another shot for theirs, or been careless in ramming.

Remarks on Accidents.

With the number of inexperienced miners employed it is only surprising that more accidents have not occurred. Probably the increased number of Deputies has had a beneficial effect.

In addition to the mining accidents, the following occurred above-ground at Coalbrookdale: (1.) On the 18th March Edward Phillips, when freeing a chain at a tension-pulley, got his head bruised and arm broken. The rope was stopped, but he had not counted on its being under tension. (2.) On the 21st March William Sneddon, a hooker-on at Denniston screens, in spragging a truck, which was no part of his work, fell, and the tub passed over his arm. (3.) On the 8th April Vincent Jones, in recovering the lid of his oil-kettle, which had dropped under one of the corner pulleys, got his arm bruised at the shoulder. He ought to have signalled the rope to remain stopped. (4.) On the 3rd August John Bell, aged eleven years, was injured on the Westport Company's incline by a passing truck. He was not employed by the company, and ought not to have been on the line, but had been sent with his brother's tea.

I have, &c.,
N. D. COCHRANE, Inspector of Mines.

The Under-Secretary, Mines Department, Wellington.

No. 4.

Mr. JOHN GOW, Inspector of Mines, to the UNDER-SECRETARY of MINES, Wellington.

SIR,— Dunedin, 31st March, 1892.

I have the honour, in compliance with section 67 of "The Coal-mines Act, 1891," to report as follows for the information of the Hon. the Minister of Mines.

CANTERBURY COAL-MINES.

Springfield Colliery (6th March).—I examined the working faces—there are only two just now—one of these I fancied was a little warm, through the want of a better current of air through this part of the mine; Mr. Lindop pointed out to me that he was preparing to make an air-way so as to increase the current of air. There is very little coal being hewn just now.

Canterbury Mine, Sheffield (8th March).—The men were not working on the day of my visit. I examined the workings, and found the air very sluggish at some distance from the shaft; Mr. Austin accounted for the bad ventilation by the mine not having been working for the previous three days. He, however, promised to improve the air-current before the men were again put in to work. I called his attention to the fact that he had not yet paid any money into the Sick and Accident Fund. He promised to do so at once.

Homebush, South Malvern (10th March).—I examined all the working-faces and the brake-gear in the mine and found them in good order. There has been very little done in the mine since my previous visit. The strike, twenty months or two years ago, nearly stopped all coal-mining, since which time very little appears to have been done to revive the trade. The air is good throughout the workings, and the Act is well observed.

Snowdon, Rakaia Gorge (7th March).—This mine was not being worked on the day of my visit. I think the principal consumer is probably the owner, Mr. Gerard. It appears there were only 50

tons hewn for the year. A horse-whip is used to raise the coal from the pit. I had not time to call on Mr. Gerard at his station—I had, at a very late hour, a long ride before me to Springfield, over new country to me.

Acheron, Lake Coleridge (7th March).—Mr. Murchison told me that he had not taken out any coal from the mine during the past twelve months. The only coal taken from the seam is for his own use—a few tons for the year.

Whitecliffs, South Malvern (10th March).—I inspected all the working-faces and found the air-current not as good as it should be at the extreme end of the working-faces. Back a little from ends of the main headings I found the air-current very good, and a good current going up the upcast shaft. I had to find fault with the way the timber was being cheeked and fitted, as also the straggling way in which the sets of timber were placed throughout the workings. There appears to be no system, or a great want of knowledge of how to do the timbering in a shapely manner. The fiery part of the mine has been closed up. The manager appears very willing to do what is required when pointed out to him.

Mount Somers Coal-mine (12th January, 1892).—Since my previous visit I find that many of the large pillars have been split once, and in some places twice; I also find that much of the tops has been taken down in some places. The pillars and roof appear to stand very well so far, notwithstanding the great height of the bords. I did not see any of the places down. Mr. Harris, the present manager, has promised me not to do any hewing in the old pillars, as they are now as small as they can be to be safe. Mr. Harris proposes opening out a new block on the west side of the adit-mouth by opening a new adit at a higher level. A new adit is also to be put into a block on the east side of the old workings, and at a lower level.

South Brockley Coal-mine (10th March).—This is a new mine situate in the Malvern District, in the Wairiri Valley. The adit has now been driven 230 yards, and is thought to be within 30 yards of the 5ft. seam of good coal said to exist. In the 230 yards driven, several seams of coal have been passed through, measuring from 1ft. to 5ft. thick. Mr. W. Smart, the manager, says that the larger seams passed through are good marketable coal. I hope the coal ahead is better than any passed through, because I did not see any that I admired. A tramway is being laid 35 chains from the adit to a convenient place to load a traction-engine, by which means the coal is to be transported to Christchurch and many other places. The adit is timbered in many places to keep the roof up. These is considerable drainage in the tunnel, and by far too little fall to carry away the water. It is mud and standing water from end to end, and will always be so in my opinion.

Otago Coal-mines.

Kurow, Kurow, W. B. Cairns (28th February).—The opening of this mine was close to the Warekuri Stream, and nearly on a level with the shingle-bed, but considered quite safe in ordinary floods. Last February (1892) flood was, however, an extraordinary one, and very much beyond anything of the kind ever before seen there. It covered the flat from terrace to terrace, and filled the mine so completely as to destroy all trace of its whereabouts. I do not think the same workings will be opened again. Mr. Wade (the owner) has now two men employed driving an adit-level on the west side of the creek to ascertain if there is any good coal there. I do not think the prospect promising.

Cairns's Warekuri Coal-mine (29th February).—W. B. Cairns is preparing to open his old mine on the Kurow Creek, which has been closed since the flood in February last. He is driving an adit-level into the hill to where he knows there is some solid ground. The adit is not in good standing ground, and therefore has to be timbered. The caps now in position are not strong enough, and I have instructed Mr. Cairns to put in more timber in order to keep the roof safe for the men passing in and out of the mine. He has promised to attend to this.

Warekuri Coal-mine (29th February).—This is a new mine being opened by Mr. Collins. An adit 75ft. long cut the seam in a nearly vertical position. It is said to be about 30ft. thick. The seam will be worked north and south like a quartz reef. The coal is solid, and the works are likely to stand well. The adit is timbered in places where the roof shows an inclination to flake. Mr. Collins has not a copy of the Coal-mines Act, but has promised to get one.

Kurow, James Phillips's Coal-mine (28th February).—This mine is situated on east side of the Kurow Creek, and the adit is not much above ordinary flood-level. The opening was reached by the February flood, and the mine filled. The amount of damage done to the workings cannot be ascertained till the water is pumped out, and I am doubtful if this will ever be done.

Prince Alfred No. 1 and No. 2 (1st March).—I examined all the workings from the one mine to the other—from the east adit to the west adit—both of which are still being worked. There appears to be very little good solid coal left in either of the mines. There are small blocks of good coal met with from time to time, but a great deal of driving through rubbish has to be done to find them, therefore much labour is lost in searching for marketable coal. The roof and floor are bad throughout the two mines, and, therefore, much timber has to be used to keep it open. I think the mine is nearly worked out. The air is good. A small shaft was sunk 40ft. deep in the old workings to see if a second seam existed, but no coal was found at that level. The shaft was then filled up. I saw some of the strata passed through, and am strongly of opinion that coal exists at a lower level.

St. Andrew's, Papakaio, Mine (1st March).—This mine is in first-class order, and well laid out for working. The adit is remarkably well timbered, and made secure. The workings are well ventilated, and very dry. The furnace and air-shaft are in good order. The Act is well observed.

Ngapara, Ngapara Mine (1st March).—I found all the workings in the same good order they were in on my previous visit. I noticed the roof in some of the leading headings has a tendency to chip upward into narrow channels to the sand and water overhead. These places have to be watched very closely, with timber at hand, in case of a "run," which would fill the workings all round the break. The workings are dry, and the air is good. The Act is well observed.

Shag Point Coal-mine (28th July, 1891).—I have visited this mine on several occasions during the year to inquire into accidents and ventilation, which were reported on at the time, since which time the principal mining has been done on a block on the southern boundary of the lease, where the coal is good, but in some places very thin. Some pillars were being taken out, but they were all within the foreshore, and every care was being taken to prevent any large subsidence of the roof. The coal was being raised from the mine by a small shaft and engine at the spot, which enables the manager to proceed with the sinking of the main shaft to a lower seam, which work is still in hand. The manager considers he has plenty of coal in the part of the mine he is now working to keep his customers supplied till the main shaft has been sunk to the lower seam, and the mine opened out at that level. There is a quantity of new mining-plant on the ground. The sinking is solid, and good standing measures; only enough material is excavated to allow the timber to be placed in position. The work appears to be carefully done by old miners of experience. The air was good in all the workings at the time of my last visit, and no complaint has been made since then. The fire has been walled off from the main shaft to prevent any chance of subsidence there.

Early Bank, Otepopo (4th February).—This mine is worked from a shaft 60ft. deep, and is also reached by a dip-drive 50 yards long, a short distance from the shaft. There is a vertical ladder in the shaft very badly made, but as there is no need for it I did not ask the miners to remove it. I saw only a man and a boy in the mine—the owner was from home at the time. The mine has not been long working, and the seam is only 3ft. thick. It is, I think, bad standing ground, and not likely to be working any length of time. The workings will have to be very narrow to be safe without timbers.

Herbert Coal-mine, Herbert (5th February).—I examined all the workings and found them in good order, with a splendid roof throughout the old workings. There are only two men working in the mine. The air is good everywhere at present, but some attention to a new airway will be required shortly. I understand my visit is the first Inspector's visit to this mine, although it has been opened some years.

Allendale Coal-mine (29th July, 1891).—Inspected all the workings, and find the seam has many faults throughout the workings. The seam varies from 5ft. to 2ft., going south, but a dip-drive, a distance of 50 yards to the northward, is said to be in 7ft. of good coal. This dip was filled with water at the time of my visit. It is intended to put up a winding-engine at the head of the dip in order to extend the dip to a considerable distance, to prove the value of the seam toward the low-lying land in that locality. If the result be satisfactory, then it is intended to lay a branch railway to Busby Station. Since these notes were written, the railway contract has been let.

Ida Valley Coal-mine (28th April, 1891).—I did not find any one about the mine, and could not see any one near the pit. It is openwork—a thin seam and shallow stripping—and little, very little coal being removed during the year.

Dunsumier Coal-mine, Hill's Creek (28th April, 1891).—This mine is a large open paddock and a thin seam. The stripping is shallow and easily removed. The output is small.

Cambrians (J. R. Jones's) Coal-mine (28th April, 1891).—This mine is being worked by a long open face in a gully where the stripping will soon be very much deeper. It will therefore very soon be necessary to keep the stripping well in advance of the coal-face, to prevent any accident to the coal-hewers by a fall of earth. There was not any one about the mine on the day of my visit. The face of the workings was in good order.

Cambrians (Dungey's) Coal-mine (28th April, 1891).—This mine is situate in the corner of a hill close to and on the east side of Jones's mine. The stripping is from 8ft. to 12ft. of water-worn gravel, very good standing ground; but the way the stripping was being done I did not approve of, and had to speak to the young man about it in order to provide against any chance of an accident. The lignite in this and Jones's mine is remarkably good, having large quantities of resin in layers through it from top to bottom. There is also in this locality a rich layer of kerosene shale, which has been proved to yield 92 gallons per ton. It is much used for kindling, and in bakers' ovens.

Kyeburn Coal-mine, Commercial (27th April, 1891).—This seam is nearly vertical, and is being stoped in short blocks overhead to the level of the floor of adit, equal to about 14ft.; this space is then filled in with *débris* from overhead. The seam extends from the hills down to the Kyeburn River flat, when it runs parallel with the stream. The seam here has from 5ft. to 7ft. of heavy gravel-wash lying on the top of it, which is being stripped off as required. The depth of coal to be taken out in this way will probably be limited to from 17ft. to 20ft.—water level—when a low-level tunnel will have to be put in from the river to drain the water out. On the east side of the coal seam there is about a chain in width of sea-sand, in which there are many sea-shells—probably 2,000ft. above the sea. The mining works are fairly good, and the air is good in the adit part of the workings.

Salisbury, Taieri (16th June).—This mine has a siding in the Central Railway line. Two adit-levels were on the coal at the time of my visit, and preparations were being made to open out the mine so as to put on more men. The appliances in use to lower the coal from the mine to the bottom of the hill are very primitive, and unsuited for a large output.

There are many mines on my list of 1890 that have not shown any output during the last two years, having been either worked out or work suspended. Of these I have struck twelve off my list, and have added fourteen, from some of which I have not received any returns showing their output for the year.

McCreedy's Coal-mine, Kyeburn (27th April, 1891).—I found the gate at the mouth of the adit closed, a truck placed against it, and a piece of timber placed in front of the truck. I could not find any one about the mine, and did not see any indication of any one having been doing any work for several weeks past. I learned from Mr. Archer, in the adjoining mine, that there was not more than a load per week taken from the mine.

Ida Valley Coal-mine, Beck and McLean (28th April, 1891).—This mine was reported to me some time previous to my visit to be on fire. It appeared that some hot ashes had been thrown on

the surface a short distance from the pit. A strong wind came and carried the ashes in full glow into the pit, which immediately became one mass of flame. Water was as quickly as possible conveyed along an old race close by, and the fire was quickly put out. It was very fortunate the race was so handy and water available at the time. The seam is between 20ft. and 30ft. thick, and is in good working order.

Ida Valley, Mrs. Andrew's Coal-mine (28th April, 1891).—This mine has a large open face with shallow stripping, and appears to be carefully worked; only one man in the mine.

Perseverance, Kyeburn (6th April).—The old workings have been abandoned for the time being in consequence of the difficulty of getting rid of the water in the dip-workings. A new adit is now being put into the hill from a gully on the dip side of the seam, which should command a large body of coal. I had to find fault with the way the timber was fixed in position, as the legs and caps were not checked, and there is likely to be very much side-pressure. The timber at the time I saw it was likely to collapse at any moment. I ordered inch battens of 3in. by 25in. to be at once nailed to caps between the legs. Some work that was in progress a short time ago, in order to get at the dip through Dudley's ground, was suddenly stopped.

Alexandra Mine (14th April).—I inspected all the workings in Thompson's mine, when I found two Chinese only working. These men do the work very neatly, but they do not like it. The work is well laid out, and only 5½ft. out of the 14ft. of coal is hewn. All the old workings are as solid as a rock. The mine is dry and the air fairly good.

Macqueenville, Alexandra (14th April).—Lett has sunk a second shaft since my previous visit, but it is no improvement on the old one. The ladder stands vertical as it did in the old shaft. I could not find Mr. Lett about the place; I think he was at Clyde on the day of my visit. I went down the shaft (80ft.), and examined all the workings, and found them in good order. The coal is 14ft. thick, of which there are about 5ft. only being taken out. There is no timber in the mine.

Waikerikeri Coal-mine, Clyde (20th January, 1891).—I inspected the mine workings at the bottom of an old shaft 84ft. deep, where the good coal is nearly all worked out. A new shaft, 40ft. to the westward of the old one, has just been completed to a depth of 10ft. below the old one, and closely timbered with 3in. planking throughout. It is now intended to use the old shaft as an upcast shaft, by which a constant current of air will always be maintained by a little attention from the miners. There are generally three men employed in the mine. The mine-workings are also reached by an inclined tunnel, which was previously used as an airway and outlet in case of an accident. I found the air good at the time of my visit, but learned that it had been bad in some of the old workings some time previously. It is not intended to take out any more coal from the old workings, but to open out on new ground.

Dairy Creek Coal-mine, Clyde (20th January, 1891).—This mine was reported to me to be on fire for the past two years. I found the tunnel mouth boarded up and close battened. While I was there the proprietor removed the boarding to allow me to inspect the workings if possible, but I found it uninviting, and thought it not over safe to venture far into the workings so soon after the boards in the tunnel mouth were removed. There did not appear to be much heat in the mine; I am, therefore, inclined to believe the fire to be nearly exhausted.

Excelsior Coal-mine (4th May, 1891).—This seam stands nearly vertical, and is nearly worked out from the surface to the level of the adit, which was driven at the level of the mining tailings in the gully close by. A new adit is now being put in on the line of the seam, but from another gully farther to the south-east, and at a lower level, which is calculated to enable the miners to get about 30ft. of coal below the old workings. The mine is being carefully worked, and the air is good.

Bannockburn Coal-mine (3rd May, 1891).—T. Wilson's mine is situated on the south-east bank of the Kawarau; has been opened nearly twelve months without sending in any returns to the Mines office. I asked Wilson why he had not complied with the Act, and he pleaded ignorance of any Act or mining regulations. I gave him a form to be filled in on December next and posted to me.

Pryde's Mine, Cromwell (4th May, 1891).—The old workings previously inspected by me are closed up, and a new dip-drive is already completed into the coal. The mine is being opened to the right and left of the dip in a systematic manner, and with a view of a long spell of work. There are three men employed.

Gibston Coal-mine, Gibston (6th May, 1891).—This mine, originally the property of Steel, is now owned by Martin McAll, and known as Saddle-hill Mine. I examined all the workings, and found them in good order. The air was also good. The seam is 20ft thick, and dips to the west. There are two men employed in the mine, but not continuously. I think this mine must be about 3,000ft. above the sea level, and probably 2,000ft. above the hotel. All the coal has to be sledged down by a horse to a spot where the drays can load. This plan of transport must be necessarily slow and costly to the miner, and at once suggests a remedy. It is a splendid site for an aerial tram, by which the coal could be emptied into the carts or drays without any handling after leaving the working-face in the mine. The cost would not, I imagine, be very great, and if it reduced the cost of delivery in drays, and consequently increased the sales, as it should do, then it should soon pay for itself. What is required is a light steel rope, a strong brake, and only a few tubs, and poles at long intervals. It is a good coal, and should, if properly managed, put all other coals out of the Arrowtown and Queenstown market.

Gibston-Cowan's Coal-mine (6th May, 1891).—This mine is about 1,000ft. above the hotel, and is simply a stip from the seam *in situ* 1,000ft. higher. Martin's mine: Cowan is now taking out his last block of coal, unless he can find more convenient to his adit. He expects to get out all the coal that is worth working by 1st August.

Jackson's, Alexandra (14th April).—This mine had not long been opened at the time of my first visit. It appears it did not work long, as I found it filled with water on my last visit.

J. Jones's Coal-mine, Coal Creek (22nd July, 1891).—A large body of coal is constantly leaving this mine for the use of the dredges on the river. The large body of coal stripped by sluicing a few months ago has not yet been removed; and no attempt has been made to test the depth of coal underfoot in the pit. The mine looks more like a stone-quarry than a coal-pit.

James Craig's Coal-mine, Coal Creek (21st July 1891).—This mine is being worked steadily, but the stripping is all the time getting heavier and more costly to remove by reason of a very heavy creek-wash lying thereon. The stripped face has a safe batter all round.

William Crossan's Coal-mine, Roxburgh (22nd July, 1891).—This mine is situate on the east side of the Clutha River, opposite Commissioner's Flat. It is an open pit, with from 8ft. to 15t. of stripping, which is fairly battened and safe. The drainage is pumped out of the pit by a small water-wheel.

William Classon's Coal-mine, Roxburgh (22nd January, 1891).—This mine is situate on the opposite side of the Clutha River to Coal Creek. It is an open face, with stripping from 6ft. to 12ft. About 10ft. of coal is being taken out; but the bottom of the seam is not in view, and, I am told, has not been seen. There is a small quantity of drainage coming into the paddock, and a small water-wheel and pump keeps the mine dry. There does not appear to be a large output from this mine.

Jones's Coal-mine, Roxburgh (22nd January, 1891).—The output of coal from this mine should be much larger this than during any previous year, on account of several steam-dredges being supplied from this pit. No attempt has yet been made to ascertain the depth of coal under foot in this or any of the Coal Creek mines. There was a sad and fatal accident in this mine on the 18th July last to one Thomas Low, who used to occasionally of his own free will hew coal in the face. On this occasion he was left alone in the mine while the workman went to his dinner, during which time the proprietor strolled into the mine to look at the work, when he found Low badly injured by a fall of coal from the face. Low explained how it had occurred, and died shortly after he was carried to his house. His age was supposed to be seventy-two years.

Craig's Coal-mine, Coal Creek (Roxburgh, 22nd January, 1891.)—This mine is an open face in the bed of Coal Creek, where the creek water has to be turned from side to side in channels excavated at considerable cost. The stripping is from 3ft. to 7ft. of heavy washed gravel and large stones. The bottom of the seam has not yet been seen, but 8ft. of coal is being taken from the water-level or tail-race level.

Coal Creek Coal-mine, Roxburgh (22nd January, 1891).—Mrs. McPherson's mine. The coal is quarried out of this mine from an open face 18ft. high, from which a large body of coal has been taken during the past twenty years. The stripping is from 5ft. to 8ft. of heavy water-worn gravel. The mine is carefully worked.

Mrs. McPherson's Coal-mine, Coal Creek (21st July, 1891).—The stripping in this mine is somewhat heavy in places, consisting of large water-worn stones—creek-wash; in places the heavy wash is shallow. The coal-face, from 10ft. to 12ft., is being carefully worked.

Fernhill Coal-mine (28th May, 1891).—I examined all the workings and found them in good order, and the air good; not many men working; trade a little slack.

Saddle Hill Colliery (9th June, 1891).—I examined all the workings and found them in good order, and the air good. The mine is being carefully worked, and the Act well observed.

Glenochiel Coal-mine (10th June, 1891).—I examined the three working-faces and find them in good order. Near the bottom of the dip the seam is nearly flat, and shows 16ft. of coal. The output is small, and the mine is carefully worked.

Walton Park Colliery (5th June, 1891).—I find the miners' monthly report very satisfactory. I examined all the working-faces and airways throughout the mine, and found all in good order. Find the Act well observed, and plans completed up to 24th February.

Mosgiel Colliery (29th May, 1891).—I went through all the workings, and find them in good order. There are seven men employed in the mine and three men outside. The mine is a little wet in places, and makes in all about 3,400 gallons per twenty-four hours.

Freeman's Colliery (4th June, 1891).—I examined all the working-faces in the mine, and found them as they should be. I found the roadways in good order, and a good supply of air passing through the mine-workings. When examining the daily report-book I found only one report from the miners for the past twelve months. I requested Mr. Green, the manager, to ask the miners to state in writing why they had not fulfilled the duties for which they were appointed and as required by the Act.

Brighton Mine, Walker's (11th June, 1891).—I examined new and old workings, and find all loose-looking faces newly timbered to prevent the roof falling. Mr. Walker pointed out to me how he intended to alter the dip-drive to the north of the present one to improve the working of the mine. He is not doing much in the mine just now.

McColl's Coal-mine, Brighton (11th June, 1891).—I went through the mine with the lad. The roof is not good, but I do not consider it dangerous. The seam is thin, but is improving to the north. The output is very small.

Hardwick's Coal-mine, Milton (17th July, 1891).—The men were taking out top-coal on the day of my visit, and had a large quantity down from a smooth parting overhead, which I did not think over safe, and instructed the man in charge to put a prop under in order to protect the men while the coal was being cleaned up. Mr. Hardwick was ill and confined to his house when I called and spoke to him about the want of care at the mine. He said he had told the man to do the work I had complained of not having been done. The air is good, and pillars solid and strong.

Real Mackie Mine, Milton (16th July, 1891).—I passed through and examined all the old workings in the mine, but did not find any one there. I afterwards learned that the mine was not being worked just then in consequence of the bad state of the roads in that locality.

Gibson's Mine, near Lovel's Flat (1st July, 1891).—At the time of my visit two shafts (260ft.) had just been completed, and the men were then opening out a chamber and doing other necessary

preparatory work. The coal that was being tipped on the surface appeared to be much crushed and looked like slack. I again visited the mine on the 17th, and learned from the manager that some preparatory work was still going on at or near the bottom of the shaft, and that the mine would not be in working-order for three months yet. I instructed him to at once put up signal lines, and fix a cradle at top of shaft for cage to lift in reaching the surface, which he promised to do. Since making these notes I learn from Mr. Gibson that he has suspended all work at the mine for the time being, in consequence of not finding any solid hard coal near the pit-bottom, but that he will resume work at some future time, when he has had time to think over the uncertainty of mining specs.

Eliott Hill Coal-mine, Lovel's Flat (16th July, 1891; Peter McGee, manager).—An incline-tunnel of 1½ chains in length leads into the mine, where the seam of coal is from 6ft. to 8ft. thick, and nearly horizontal. The mine is in good order; only one man working.

Benhar Coal-mine (John Nelson, proprietor; 13th January, 1891).—I found that the old mine-workings east of the railway-line were on fire. The manager was at the time of my visit building up a stopping of brickwork, 4½ft. thick, 6ft. wide, and 7ft. high. The work was to be completed in a few days. I found the mine well ventilated and well timbered. The Act is generally observed. Examined journal and day-book.

J. Morrison's Coal-mine, Benhar (13th February, 1891).—This mine has not been working for some months past.

Thomas Aitken, Benhar Coal-mine (13th February, 1891).—The workings are being extended down the dip, where the seam maintains its thickness, 18ft., and of good quality. The seam is in good order, and the air is good.

Kaitangata Coal-mine (17th February, 1891; Mr. Thom, manager.).—Accompanied by the manager, I examined all the workings throughout the mine. I measured the air in the return near the furnace, and found it to be 27,000ft., which is more than is required by the Act. I found the mine in good order, and the Act well observed. I have been in the mine several times since the above date, and found the men careful in doing their work, and the workings in good order. 30th September: Inspected all the workings, south and north, and found them in good order.

Castle Hill, Kaitangata (Mr. Carson, manager; 17th February, 1891).—Examined this mine throughout, and found it in good order. The pillars and roof are in the same condition as when last inspected by me. The air is also good, and no trace of gas.

Kaitangata, Fraser's Mine (12th October).—I visited some old workings, but did not see any one about. Having heard that a small quantity of coal came from this property into Kaitangata, I think there must be another pit in the locality, as the old workings visited by me did not look as if coal had been hewn there lately. I will at some other time make another search.

Castle Hill New Mine, Kaitangata (Mr. Hay, manager).—A new shaft, 13ft. in diameter, is being sunk and lined with bricks. This work is going on at the base of, and in the west side of, the hills facing the lake. While the sinking of the shaft is going on a railway-line is being constructed through the main street of Kaitangata to the shaft from the Kaitangata Coal-mining Company's line. The latter company agrees to draw the coal from the new company's pit to Stirling. The pit is supposed to cut the coal at about 600ft. from the surface. A winding-engine with a built-in boiler is at work; a brickmaking-machine is making the bricks close to the shaft, and a reservoir is just completed in a gully just a short distance above the shaft and other works, and which will hold a never-failing supply of water for the engine. The whole of the works have been very systematically laid out, and are considered extensive for Kaitangata. I have visited the works twice since the above notes were made, and may add that the shaft is now down over 400ft. in fairly good sinking, but inclined to be soft and sandy in places. More boilers and larger pumps have lately been put on the ground to cope with the extra water met with as the shaft is deepened. I expect to see the surface-plant made very complete after the coal is struck.

Castle Hill Coal-mining Company (28th September, 1891).—Since my last annual report the small prospecting shaft then being sunk found an 8ft. seam of good coal, and a new company has been formed to open out the mine on a large scale. The site selected for the new pit is some little distance to the north of the prospecting shaft referred to, and was chosen because of the dip of the coal in that direction. It is also hoped that the new pit will cut the seam at the lowest dip in the lease, which would greatly facilitate the working of the mine. The shaft now being sunk is a round one, of 13ft. diameter, lined with bricks, which are being made on the spot A portion of the shaft is to be bratticed off with boards to act as an upcast till the air-shaft—the prospecting shaft—is driven to. The sinking is through hard sand at times, and hard layers of shells. As the sinking proceeds the water is getting heavier every week; so much so that more than one set of new pumps have been in use a while and then set aside. I think it is more than likely that some of these discarded pumps would have done all that was required of them if the water carried a much less quantity of sand in suspension. The shaft, at the time of my last visit, was down over 400ft. The winding-engines are the best in Otago, and work very smoothly.

Wangaloa, Kaitangata (29th September, 1891).—I visited the mine and looked over the workings, but did not see any one there. I did not see any new wheel-tracks at the pit-mouth, and came to the conclusion that there was very little doing there.

Lesmahagow, Kaitangata (29th September, 1891.)—Inspected Mr. Sewell's workings, and found them in good order, and plenty of air passing through the mine. The output of coal is very small.

Crofthead, Kaitangata (29th September).—Inspected all the workings in this mine, and found the mine-levels and working-faces in good order. I found some of the old levels chipping very much overhead, especially where timbering had been done. The timber in the old workings is no longer able to hold the roof up. There is not now any necessity for the workmen to pass through these old workings.

Waikoikoi Pukirau, J. Collins's Mine (3rd October).—This is an open face at the head of a small gully where a small quantity of coal has been removed. I do not think Collins pays much attention

to coal-mining. I think he hews coal when he has nothing else to do. The coal is on his farm. The stripping is from 8ft. to 10ft. I could not see how much coal in depth. There was no one about the farm or house at the time of my visit.

Mainholm, Waipahi (7th April).—This mine is being worked by a long open face in a very systematic manner. The stripping is 9ft. deep and is all being barrowed and tipped into the worked-out ground. The stripping is carefully done by contract by three men, and the lignite is hewn by two men. A vertical steam boiler, with engine attached, pumps the water from the workings.

Gange's Coal-mine, Windham (6th August, 1891).—I did not find any one at this mine, and was told it was abandoned. I have lately learned that it is so, and will now strike it off my list.

Pine Bush, Trotter's Coal-mine (12th August, 1891).—This mine is situate close to the main road from Windham to Fortrose, and has been opened and working during the past ten years. I learn from Mr. Trotter, however, that the output has been small till the last year, when the sales were greater. The farmers are beginning to use more of it with the wood, which appears to be the principal fuel hereabout. The stripping is light generally, but will be much heavier in time. This mine was not on my list. I have sent him the usual notice.

Munro's Lignite-mine, Windham (6th August, 1891).—This mine is situate on the low river flat of the Mataura. The stripping is from 4ft. to 7ft. of soil and fine gravel, and from 3ft. to 5ft. of coal. The pit is kept dry by a drain into the lower ground close by.

Kerr's Coal-mine, Menzie's Ferry (6th August, 1891).—This mine and another known as Monro's were being worked by one Schields at the time of my visit. They are open pits on the low flat of the Mataura River, and subject to floods. The seam is low-lying and the stripping heavy. There does not appear to be much doing. A water-wheel pumps the water generally, but a horse has to assist the wheel at time of flood, when the drainage is much heavier than at ordinary times. The workmen said the mine did not pay, and they thought it would not be worked much longer. Mr. Schields has written lately stating that the mines were abandoned.

McKinnon's, Gore (5th April).—This is a shallow mine with very little stripping. There does not appear to be a large trade doing, as I see very little change in the workings since my previous visit.

Hoffman's Mine (6th April).—Open workings in several places, all filled with water. Did not see any one about the place, and concluded that mining was abandoned.

Green's Coal-mine, Gore (4th April).—The stripping is getting so deep that the men have resolved to discontinue that kind of work to get out the coal, and have started a main heading to mine underground. The heading is now in about 20ft., and is following the dip to the west. As there is a long open face of coal in view, there is plenty of room to open several faces of any height required, since the seam is 19ft thick. Several feet of coal can be left overhead for a roof, which would make the mine-workings perfectly safe, and leave the surface unbroken for almost any time.

Croydon, Smyth's Mine (4th April).—Heavy stripping is still being done, and as the work proceeds it is getting deeper. The open face is getting blocked up so much by land-slips that there is hardly room to get a dray in to the coal. The face of clay is bad standing-ground, and caves in in large blocks when there is a little extra rain. Mr. Smyth has now serious notions of discontinuing the stripping and mining it out, as Mr. Green in the adjoining mine is doing.

Fryer's, Gore (6th April).—This is a new pit being opened, with very light stripping. I did not see any one about.

Chaldean Coal-mine, R. J. Comer (14th August, 1891).—This is an open pit at the head of a swampy flat. The stripping is not more than from 2ft. to 4ft., and the seam of coal is about from 4ft. to 5ft. I did not find any one there, and there did not appear to be much traffic to the pit. This mine was not on my list. I have sent the owner a form to fill, as usual.

Heffernan's, Gore (5th April).—Open face and light stripping, but evidently there is very little output of coal. The face looks much the same as it did twelve months ago.

Sargenson's, Waikaka (6th April).—The old pit is about worked out, and Mr. Sargenson is now opening another pit close to the old one. The seam stands at a considerable angle, and will be difficult to work to any depth. The water is already a trouble.

Chatton, near Gore, Paskill's Lignite-mine (5th August, 1892).—This seam appears to stand vertical, and the work done so far is limited to removing the top of the seam for a certain distance down from the surface and following it up the side of a hill. I fear the stripping will soon be too costly to admit of the mine paying at the present price for that class of coal.

Chatton, Pemble's Mine (5th April).—During the past twelve months Mr. Pemble has taken 6ft. deep of coal off the floor of his large open paddock, and has now arranged to purchase an engine to do the pumping and winding out of the paddock. The stripping is shallow and safe.

Pukerau, E. C. Orchard's Mine (3rd October).—Open face, in the bed of a gully three miles from Pukerau. The stripping is just now from 2ft. to 4ft. only, and 12ft. of coal, standing nearly vertical. The top or outcrop of the seam only is being got. The dip is to the west; on the east side of the gully is a hill in which the seam may possibly be found lying flat. I have suggested it would be well to do some prospecting in that direction, as it would not be costly.

Pukerau, J. H. Dudley's Coal-mine (2nd October).—This mine is an open face, with from 4ft. to 10ft. of stripping, including shale, and 16ft. of coal. The mine was opened in December last, and partly filled up again for a time. There has not been much of an opening made yet.

Enterprise, Pukerau (2nd October).—A new opening on the east side of the lease is being made to get at the dip of the coal-seam, and a heading has been started in Dudley's lease, where 9ft. of coal will be taken out, leaving about 7ft. overhead. The coal is very solid. Two men are employed. (Since this was written some disputes with Dudley have arisen, and the works are now altered.)

Pukerau, Chatton, C. O'Hagan (2nd October).—This is the most extensively worked mine in the district. The bords are well laid out and most carefully worked. The roof is carefully tested at short intervals by boring holes, in order to be sure of a sufficient thickness of coal to keep

it up. The bords are very wide, but quite safe. The ventilation is very good throughout the mine. O'Hagan generally does all the work alone, but during "threshing-time" (April) he employs one or two men.

Kingdon's Mine, Croydon (4th April).—This seam stands at a very steep angle, and cannot conveniently be followed to a level below the nearest gully; therefore the seam is being followed up the rising ground and near the surface, where the stripping is light.

Mr. McIlraith's Coal-mine, Mataura (14th August, 1891).—This mine is an open pit, and has apparently been opened some time, but worked, so far, on a small scale. I did not find any one about the mine, but was informed that one H. Smith was acting as manager. I could not find either owner or manager while I was there. This mine was not on my list, but I have sent Mr. McIlraith notice to send me returns showing his output to the end of 1891.

Beatie's Coal-mine, Mataura (14th August, 1892).—This is an open face, near the main Mataura Road, and very much resembles Town's mine, which is close by. The water here is also a trouble, and is being pumped by two small wheels in separate faces. In No. 1 face the stripping is from 6ft. to 12ft., and has 16ft. of coal, all good. In No. 2 face the stripping is from 6ft. to 7ft., and a 6ft. seam of good coal. Both faces are flooded at times by the overflow of a small creek crossing the property. The stripping appears to be sloped to a safe batter.

C. Town, Mataura Mine (14th August, 1891).—This mine is much troubled with water, which has hitherto been pumped by a small water-wheel. Of late the water-wheel has been unequal to the work to be done, therefore a small vertical boiler and engine attached is now being fixed up to do the work of the old wheel. The stripping is very heavy, from 8ft. to 12ft., but safely sloped to avoid a fall. The coal-seam is 16ft., and all is being taken out.

Sleeman's, Mataura (14th August, 1891).—This is a new pit opened since last returns were sent in, and is situate close to the main Mataura Road. The stripping is heavy, and will average about 11ft. of fine gravel, and yielding from 6ft. to 7ft. of coal. I had to speak about the slope of the stripping, and requested Mr. Sleeman to give it a good batter, which he promised to do in the future. This mine makes much water, which is very troublesome in the lowest 5ft.

Mataura, E. Townsend (14th August, 1891).—I did not see any one about the mine, and from the general appearance of the working-face and dray-road leading to the same I do not think there can be much doing. I think the output can only be to his own house. The stripping is getting deeper as the coal is removed, and much of it has fallen in by the late rains.

J. A. Mutch's Coal-mine, Mataura, (14th August, 1891).—Mr. Mutch has opened two pits on his land. The first one, after having been worked for a while, was abandoned, and the second one is now being worked on a small scale, I think principally for his own use, in which case the output will only amount to a few, say 20, tons in the year. The stripping is very shallow, but the coal-pit will not be easily drained. This mine was not in my list. I have sent him the usual notice.

Waikaka, Edge's Mine (5th April).—Open face of considerable depth, but very neatly sloped. The mine is most carefully worked.

Wairio, Nightcaps, No. 1 and No. 2, T. Knight (19th September, 1891).—These two mines have changed hands, and I only found this out when on the ground. T. Knight did not send me notice of the change. The Nightcaps Coal Company is now working the mines, and making some surface-improvements to load drays.

Nightcaps Company, Wairio Reserve (19th September, 1891).—This is an open face, with 7ft. of coal, and 4ft. stripping. It is being worked, and dips to the north-east. The old mine, No. 1, is now closed, and No. 2 is now called No. 1. I examined the workings, which are reached by an adit-level. There are three seams, of the following thickness: 1st, top seam, 17ft.; 2nd seam, 9ft.; and 3rd seam, 15ft.; all good clean coal, and in passable standing ground. Wherever the ground shows an inclination to cave in, timber is at once placed in position. The coal is very solid, and requires blasting down. The working-faces are in good order, and there are thirty-seven men employed in and about the mines. The original No. 3 was an open face in the flat, which is now considered worked out. It was full of water at the time of my visit. No. 4 used to have the stripping done by sluicing-off the side of the hill. It is now included in No. 1. No. 2 is the mine originally held by T. Knight, and known as "Wairio." This has been purchased by the Nightcaps Company, and is being worked by four men. One part is openwork, with from 6ft. to 7ft. of stripping, and the other part is being worked by bord and pillar. No. 3 is an open face, with about 4ft. of stripping, and 7ft. of very good coal. The coal from this pit has to be carted about two miles, over tussocky land.

William Reid's Coal-mine, Nightcaps (19th September, 1891).—This mine is still openwork, stripping from 5ft. to 7ft., and from 12ft. to 13ft. of coal. The motive-power for lifting the water is a vertical steam-engine of 3½-horse power, working six small pumps, and lifting the water 27ft. The shaft and plant is in good order.

Morley Village, Sam Benson (19th September, 1891).—This is open workings, with 9ft. stripping and 4ft. seam. There was no one about at the time of my visit, and the paddock was full of water. I do not think there can be much doing.

Wairio Coal-reserve, Reliable Coal-mine (19th September, 1891).—J. Alley's: Open workings, with 2ft. stripping and 12ft. of coal. No. 2 pit: There is a 6ft. seam of coal, and 5ft. stripping.

Hokonui, Winton, Coal-mine (5th October).—I went on a small engine to within a mile of mine. I learned from the man in charge of the engine that there was no mining going on, and that there was not a man to be found within three miles of the pit. I therefore returned to Winton, after having seen the railway-line as far as the engine could go. The line has been lately lifted and relaid on fresh ballast and new sleepers, and this work was still on hand at the time of my visit. This line-work is all preparatory for a fresh start on a larger scale of output from the mine at an early date. The mine is to be opened in a fresh place by sinking a shaft, or making an incline-tunnel, similar to that in the Kaitangata Mine. Mr. John Hayes, of Castle Hill Colliery, is the consulting engineer, who is now preparing the necessary plans.

Fairfax, Fairfax, Todd and Graham (8th October).—Since my previous visit the stripping has been discontinued, and two levels have been driven from the open face, taking out 5ft. 8in. of coal in height. These levels are being continued parallel for a considerable distance in the coal, leaving a pillar between of 15ft. thick. I have instructed them to drive an airway through this pillar where they are now working, and to sink an up-cast shaft, convenient to the open face, and place a furnace therein. They have agreed to do this work at an early date. The mine is secured in a very substantial manner by strong timbers, well fitted.

Isla Bank, Fairfax (8th October).—This is still being worked as an open face, though the stripping is getting very heavy. The stripping face is good standing ground that will be quite safe with a small batter.

Orepuki Coal-mine (16th September, 1891).—Mr. Cassels has opened a mine in another place since my previous visit, and is now following the dip of the seam to the eastward. The dip-drive is the only work at present in hand, and the present intention is to extend this some distance in the hope of finding a change in the dip for the better working of same. Mr. Love, the manager, informed me that he had passed through some ground that was very loose overhead, and that it ran considerably. This part is now closely timbered overhead with caps, each resting on a set of legs. The coal-seam appears to have been very much disturbed where the extra timber is placed. There are only three men employed at present. The mine rules are posted up at the pit-mouth. I examined the covering of the original shaft, and found it in a safe condition.

Popham's Coal-mine, Orepuki (16th September, 1891).—I found Mr. Popham with a surveyor laying off a tramway-line from his mine to where he could get a dray-road. When the tramway is completed, Mr. Popham will open a mine a short distance from the Waimeamea Creek and north from the old working-face. I learn that very little coal has been hewn during the last twelve months.

Kowai Pass Coal-mine (8th March).—This is an old mine reopened eight to ten months ago by two miners named Smith and Taylor. The seam is thin, with an 18in. band in the centre. It is worked by an adit. These men knew nothing of the Coal-mines Act of 1891 till I spoke to them about it. They promised to get a copy, and attend to clause 68.

Edendale Coal-mine, McDonald's Pit (6th August, 1891).—This mine is only being opened, scarcely any coal having yet been removed. The seam is a little below the level of a small stream close by, and will therefore require pumping-plant to work the pit properly. The stripping is fine gravel and clay, from 4ft. to 6ft. deep. The road to the mine is through farming-land, and almost impassable.

Mount Linton Coal-mine (T. Knight, manager; 7th October).—This mine is ten or twelve miles west of Nightcaps mines. An open face, on face of a hill where mining on a small scale has been carried on for several years, but now abandoned. Mr. Knight has now opened a pit on a low-lying flat near the creek. The pit was filled with water at the time of my visit, and there was no one about the place. I saw a sample of the coal, which I think is superior to any at the Nightcaps mines.

Accidents.

I am pleased to have to report only one fatal accident during the year, which occurred at Jones's Lignite-mine at Coal Creek, Roxburgh, 20th July, when Thomas Low was killed. There were two accidents at Kaitangata Mine. On the 5th March Adam Duff got his leg broken by a fall of coal, and on the 30th June William Barlow was injured by a fall of coal. At Shag Point Mine, Thomas Young was injured slightly by getting his fingers jammed.

Methods of Working.

Worked by shafts—		
Steam-power used	5	
Horse-power used	5	
	—	10
Worked by adit—		
Engine-plane	7	
Horse-power	27	
Hand-power	26	
	—	60
Openwork		45
		115
New mine at Catlin's not stated		1
Total		116

I have, &c.,
J. Gow, Inspector of Mines.

APPENDIX.

ACCIDENTS IN COAL-MINES during the Year ending 31st December, 1891.

No. and Date.	Name of Mine.	Locality.	Cause of Accident.	Above Ground.	Below Ground.	Fatal.	Non-fatal.	Name of Sufferer.	Remarks.
			Middle Island.						
1891. 1. Jan. 8	Brunner ..	Greymouth	Truck on incline	..	1	1	..	T. Kennedy	The deceased having, without authority, changed places with a trucker named Nuttall, placed a prop the wrong way on a truck going up the incline so that it came in contact with the roof, breaking the chain, and causing the truck to run over him. Nuttall was prosecuted and a conviction obtained.
2. Feb. 9	Waimangaroa	Westport ..	Slight explosion	..	1	..	1	John Hollows	Was working with a safety-lamp in face, but had a lighted candle in the bore, which ignited the gas. Was slightly burnt.
3. Mar. 5	Kaitangata	Otago ..	Fall of coal ..	..	1	..	1	Adam Rupp	Got his leg broken by a fall of coal.
4. ,, 18	Coalbrookdade	Westport ..	Freeing chain at tension pulley	1	..	..	1	Edw. Phillips	Head bruised and arm broken.
5. ,, 21	,,	,,	Spragging a truck	1	..	..	1	Wm. Sneddon	Fell, and tub passed over his arm.
6. April 8	,,	,,	Carelessness	1	..	..	1	Vincent Jones	Recovering lid of oil kettle from under a corner-pulley. Got his arm bruised.
7. June 6	Brunner	Greymouth	Truck on incline	..	1	..	1	J. Henderson	Left his place to borrow an axe, and got crushed by a passing truck.
8. ,, 30	Kaitangata	Otago ..	Running in front of truck	..	1	..	1	John Barlow	Running in front of cuddy and fell. Leg broken below knee.
9. July 20	Coal Creek	,,	Fall of coal ..	..	1	1	..	Thomas Law	Not employed in mine. Went into an open face of lignite to get some for his own use, when a fall came down and killed him.
10. ,, ,,	Coalbrookdale	Westport ..	Truck running away ..	..	1	1	..	Henry Jones	Chain used for lowering truck broke while he was in front of it.
11. July 27	Shag Point	Otago ..	Got fingers jammed	..	1	..	1	Thos. Young	Only slightly hurt.
12. Aug. 3	Coalbrookdale	Westport ..	Fall of coal ..	..	1	..	1	R. Mackie	Scalp wound through a fall of coal; not serious.
13. ,, ,,	,,	,,	Truck on incline	1	..	..	1	John Bell	Injured by a passing truck while taking his brother his tea. Not employed in mine.
14. Oct. 6	,,	,,	Fall of coal ..	..	1	..	1	Henry Dillnot	Taking some loose coal after firing a shot, and some fell down, breaking his leg.
15. Dec. 1	Coalpit Heath	Greymouth	,, ..	..	1	1	..	Wm. Dixon	Was going for a crowbar to prize down some loose coal after a shot, and in passing close by it came down and killed him.
16. ,, 15	Coalbrookdale	Westport ..	Shot in face ..	..	2	..	2	Chas. Prince and Edw. Wrixon	After lighting the fuse they retired some distance, and hearing a shot they returned to the face, when the shot went off and both men got burnt about the head and face.
			Total ..	4	13	4	13		

HENRY A. GORDON, M.A. Inst., M.E., Inspecting Engineer.

Statistics of Workings in Coal-mines, 1891.

NORTH ISLAND.

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 1891.			Approximate Total Output to 31st December, 1890.	Approximate Total Output to 31st December, 1891.	Number of Men ordinarily employed.			Power used for drawing Mineral.	Pumps.			Means of Ventilation.	Date of Inspector's Last Visit.
										Size of Shaft or Tunnel.	Depth of Shaft or Length of Tunnel.		Coal.	Slack.	Total.			Above.	Below.	Total.		Stroke.	Size of Barrel.	Height of Column.		
Kawakawa District.													Tons.	Tons.	Tons.	Tons.	Tons.									
Kawakawa	Moody, T. P. ..	26	semi-bitum.	1	6′ to 14′	all worked	1 in 6	bord and pillar	2	10′ x 7′	pumping shft. 240′ incline 1,320′	engine-incline	28,254	..	28,254	737,249	765,503	30	40	70	engine	6′	one 8″, two 12′	230′	steam jet	12/10/91
Hikurangi District.																										
West Bryan	Smith, Charles ..	1½	″	1	6′	6′	1 in 8	ditto	..	adit 6′ x 5′	adit 250′	adit	576	..	576	2,533	3,109	2	5	7	horse	..	..	..	natural	19/12/91
Walton and Graham's ..	Graham, T. D. ..	1	″	1	7′	7′	1 in 9	open-cast	..	..	..	..	..	..	..	1,216	1,210	6	..	6	″	..	..	..	..	..
Whangarei District.																										
Kamo	Redshaw, William	14	brown	2	4′ to 14′	4′ to 10′	varies	bord and pillar	5	15′ x 6′ and 9′ x 6′	240′	shaft	12,975	2,677	15,652	178,779	194,431	13	44	57	engine	3′ to 7′	10″	268′	natural	18/12/91
Whauwhau	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	70,853	70,853	..	..	..	..	..	..	..	..	..
Waikato District.																										
Waikato, near Huntly ..	Garrett, John ..	14	brown	1	average 17′	15′	varies	bord and pillar	1	adit 6′ x 6′	adit 660′	adit	4,795	44	4,839	122,408	127,247	11	20	31	horse	..	..	..	natural	10/12/91
Ralph's Taupiri, Huntly ..	Collins, William..	15	″	1	6′ to 45′	6′ to 35′	″	ditto	..	adit 10′ x 6′	600′	″	1,994	75	2,069	9,108	11,177	5	14	19	engine	2′	2″	86′	″	10/12/91
Taupiri Extended, Huntly ..	Tatley, William..	16	″	1	20′ to 48′	7′ to 20′	″	″	1	10′ diam.	170′	shaft	28,300	1,160	29,460	349,387	378,847	14	46	60	″	24″	10″	170′	fan	11/12/91
Taupiri Reserve, Kimihia, Huntly	Ord, John ..	4	″	1	18′	10′ to 12′	1 in 4½	″	1	adit 9′ x 5′	1,056′	adit	17,221	..	17,221	41,369	58,590	10	34	44	″	24″	5″	80′	natural	11/12/91
Miranda, Bridgewater ..	Snow, Thomas ..	3½	″	1	40′ to 53′	40′	1 in 4	″	2	15′ x 5′	210′	shaft	2,280	..	2,280	18,388	20,668	5	5	10	″	24″	4″	200′	″	..
Mokau	Lobb, Joseph ..	..	″	1	7′ 6″	6′	varies	..	..	...	..	..	2,773	..	2,773	1,188	3,961	2	6	8	horse	..	..	..	..	..
Co-operative Mine	..	..	″	2	5′	5′	varies	″	..	..	..	..	940	..	940	..	940	14	14	28	..	..	..	..	..	..

COLLINGWOOD.																										
Wallsend, Collingwood ..	Walker, James ..	23	bitum.	2	2′ 6″	all	N. 60° W. 1 in 10	longwall	..	..	..	adit	2,475	443	2,918	36,786	39,704	4	8	12	hand	siphons			natural	27/7/91
Motupipi, Takaka	Harley, Thomas..	2	brown	1	3′	″	..	open-cast	..	..	..	″	360	..	360	..	360	5	..	5	″	..	..	..	..	..
Brownville, Takaka ..	Charles, Edward	1	″	1	4′ 6″	″	..	opening	..	..	..	″	50	..	50	..	50	1	1	2	″	..	..	..	natural	29/7/91
WESTPORT.																										
Mokihinui, Mokihinui ..	Straw, M. ..	11½	bitum.	1	32′	15′	varies	bord and pillar	..	..	..	″	4,540	..	4,540	7,497	12,037	7	12	19	engine	..	..	..	furnace	16/11/91
Westport-Wallsend, Ngakawau	Broome, G. H. ..	3	″	1	16′	all	W. 35°	″	..	9′ x 6′	180′	″	..	..	..	3,441	3,441	..	..	..	″	..	..	..	natural	17/11/91
Coalbrookdale	Brown, Thomas ..	13	″	2	4′ to 20′	″	varies	″	4	8′ 8′ 8′ 6′	48′ 146′ 90′ 148′	engine-plane	159,662	32,944	192,606	881,858	1,074,464	64	238	302	″	9″ and pulsom	4″	160′ eter	furnace and steam-jet	18/12/91
Waimangaroa	Elliott, Robert ..	3	″	1	6′ to 20′	6′	W. 1 in 2½	″	..	..	..	adit	7,830	..	7,830	4,187	12,017	6	20	26	hand	..	..	..	natural	8/9/91
Wellington	Elliott, Robert ..	..	″	1	20′	6′	W. 1 in 2½	″	..	..	..	″	1,035	..	1,035	..	1,035	..	4	4	″	..	..	..	″	8/9/91
Whitecliffs	Mace, F. G. ..	1	glance	1	8′	8′	..	..	..	..	..	″	173	..	173	..	173	..	2	2	″	..	..	..	″	..
REEFTON.																										
Murray Creek	Sara, James ..	8	″	1	18′	12′	1 in 3	bord and pillar	1	4′ x 2′ 6″	40′	″	755	307	1,062	5,440	6,502	..	2	2	″	..	..	..	″	13/10/91
Golden Treasure	King, G. W. ..	20	″	1	20′	12′	level	″	1	4′ x 4′	20′	″	850	..	850	3,200	4,050	1	1	2	″	..	..	..	″	13/10/91
Inkermann	McCallum, James	6	″	1	7′	all	45°	stoping	..	..	..	″	330	..	330	2,140	2,470	..	1	1	″	..	..	..	″	31/10/91
Lankey's Gully	Lamberton, W. ..	14	″	1	4′	″	varies	bord and pillar	..	..	..	″	142	..	142	4,987	5,129	1	1	2	″	..	..	..	″	21/10/91
Phœnix	Fox, John ..	7	″	1	12′	″	E. 30°	″	..	..	..	″	712	..	712	3,538	4,250	1	2	3	″	..	..	..	″	13/10/91
Inglewood..	Collings, W. G. ..	4	″	1	3′	″	varies	″	..	4′ x 6′	100′	″	50	..	50	244	294	..	1	1	″	..	..	..	″	13/10/91
Progress	Radcliffe, W. ..	11	″	1	7′ to 10′	8′	S.E. 1 in 8	″	..	..	..	″	250	125	375	2,394	2,769	..	1	1	″	..	..	..	″	17/10/91
Sir Francis Drake	Casley, George ..	4	″	1	1′ to 6′	all	1 in 4	open-cast	..	..	..	..	400	..	400	430	830	1	..	1	″	..	..	..	″	31/10/91
Devil's Creek	Dawson, T. ..	1	″	1	7′	″	in 3	bord and pillar	1	6′ x 4′	27′	dip drive	120	20	140	..	140	1	1	2	″	..	..	..	″	22/10/91
Inangahua	Dawson, T. ..	1	″	1	8′	7′	W. 1 in 2	″	2	6′ x 3′ 6″	40′ x 80′	″	10	5	15	..	15	1	1	2	″	..	..	..	″	22/10/91
Murray Creek No. 2 ..	Butler, John ..	1½	″	1	8′ to 14′	varies	1 in 2	″	..	..	..	..	..	..	..	450	450	..	..	..	″	..	..	..	″	..
Coghlan's, Boatman's ..	Coghlan, Patrick	3	″	1	12′	9′	W. 33°	″	..	..	..	adit	86	94	180	38	218	..	1	1	″	..	..	..	″	19/10/91
Burke's Creek, Boatman's ..	Walker, F. D. ..	2	″	1	7′ 6″	7′	S.W. 1 in 3	″	3	3′ x 5′	30′	shaft	265	35	300	..	300	1	1	2	″	siphons			″	19/10/91
GREYMOUTH.																										
Brunner	Hodgson, J. W. ..	27	bitum.	1	8′ to 10″	all	S.W. 1 in 4	″	..	..	..	engine-plane	64,392	11,337	75,729	792,343	868,072	22	137	159	engine	..	..	..	Schiele fan	4/12/91
Coalpit Heath	Hodgson, J. W. .. Bishop, Jas., Gen. Manager	15	″	1	16′	″	S.W. 1 in 4	″	2	10′ x 6′ and 6′ dia.	280′ and 75′	dip drive	58,880	10,712	69,592	360,399	429,991	22	140	162	″	4′ 3′ 3′ 1′ 3″ 1′ 10″ 10″	10″ 6″ 9″ 6″ 4″ 6″ 6″	250′ 250′ 170′ 90′ 250′ 250′ 250′	″	4/12/91
Blackball	Lindop, A. B., Gen. Mngr.; Schofield, R., Mine Mngr.	2½	″	2	4′ 6″ and 12′	″	S.W. 1 in 5	..	..	9 x 6′	1,232′	adit	30	..	30	..	30	2	12	14	..	..	..	..	furnace	16/6/91

Statistics of Workings in Coal-mines, 1891—*continued.*

Middle Island—*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 1891.			Approximate Total Output to 31st December, 1890.	Approximate Total Output to 31st December, 1891.	Number of Men ordinarily employed.			Power used for drawing Mineral.	Pumps.			Means of Ventilation.	Date of Inspector's Last Visit.
										Size of Shaft or Tunnel.	Depth of Shaft or Length of Tunnel.		Coal.	Slack.	Total.			Above.	Below.	Total.		Stroke.	Size of Barrel.	Height of Column.		
Greymouth—*continued.*													Tons.	Tons.	Tons.	Tons.	Tons.									
Wallsend	Bishop, James ..	2½	bitum.	1	16′	all	S.W. 1 in 4	..	2	11′ and 14′	670′	shaft	..	..	..	205,539	205,539	..	..	..	..	3′ 3′ 6″	8″ 10″	650′ 650′	Guibal fan	..
Tyneside	Bishop, James ..	″	″	1	16′	″	S.W. 1 in 4	..	2	10′ and 6′ x 6′	116′and 25′+12′	″	..	..	..	18,398	18,398	..	..	..	..	..	..	..	..	..
Malvern.																										
Springfield, Springfield ..	Lindop, A. B. ..	15	brown	1	4′ 6″	all	S.E. 1 in 6	bord and pillar	1	12′ x 5′ 2″	246′	shaft	1,281	679	1,960	68,212	70,172	2	3	5	engine	1′ 10″	8″	246′	steam	5/8/90
Canterbury, Sheffield ..	Austin, J. ..	29	″	2	2′ 3″	″	S.70° E. 21°	narrow	1	5′7″diam	160′	″	1,250	..	1,250	36,149	37,399	3	5	8	horse	1′	6″	140′	natural	5/8/90
Homebush, South Malvern ..	McIlraith, J. A., Gen. Manager	19	″	1	7′	″	E. 10° S. 1 in 3	bord and pillar	2	5′ x 6′ 3′ 6″ x 3′	40 chain 60′ & 20′	adit	4,000	..	4,000	85,626	89,626	..	10	10	″	..	..	..	″	14/8/91
Snowdon, Rakaia Gorge ..	Gerard, W. (owner)	..	″	1	14′	6′	N. 80° E.	narrow	..	4′ x 4′	90′	..	50	..	50	290	340	..	1	1	″	..	..	..	..	5/10/89
Acheron, Lake Coleridge ..	Murchison, J. ..	22	anthracite	1	5′ 3″	all	S.W. 18°	″	..	..	..	adit	..	..	..	225	225	..	..	..	hand	..	..	..	..	5/10/89
Rockwood	Levick, H. ..	6	brown	1	7′ to 10′	″	S. 12°	″	1	3′ diam.	12′	″	300	..	300	843	1,143	..	2	2	″	..	..	..	..	10/10/90
Whitecliffs, South Malvern ..	Leeming, W. ..	11	″	2	6′ 6″	all	E. 5° S. 30°	″	1	incline	195′	incline	4,200	..	4,200	16,655	20,855	1	9	10	engine	2′	4″	..	..	7/10/89
Mount Somers	Harris, A. E. ..	27	″	1	40′	8′ to 12′	S. 60° E. 10°	bord and pillar	..	5′ x 6′	..	″	500	..	500	13,393	15,808		4	4	hand	..	..	..	..	1/8/90
Mount Somers	Ielson, D. ..	..	″	1	..	30′ to 12′	..	..	..	..	..	..	1,915	..	1,915			2	5	7	..	..	..	..	..	1/8/90
Duke's, Kakahu	Duke, James ..	3	″	1	30′	10′	..	..	..	9′ x 8′	..	adit	600	..	600	300	900	..	2	2	hand	..	..	..	..	..
Timaru.																										
Wharekuri, Wharekuri ..	Cairns, W. B. ..	25	″	1	8′	all	S. 60° W. 60°	narrow	1	4′ x 3′	80′	″	..	..	..	8,403	8,403	2	3	5	″	3″	3″	24′	″	28/2/90
Phillips's Kurow	Phillips, J. ..	3	″	..	indefinite		..	pillar & stall	1	8′ x 6′	8′	″	188	..	188	325	513	..	1	1	″	..	..	..	..	12/3/91
Kurow, Kurow	Cairns, W. B. ..	12	″	1	19′	all	N.E. 45°	″	1	6′ x 2′ 6″	53′	incline	1,300	..	1,300	2,675	3,975	2	3	5	horse	..	..	..	..	12/3/91
Otago.																										
Prince Alfred No. 1, Papakaio	Willetts, John	22	″	2	9′	″	N. 50° E. 12°	bord and pillar	1	4′ x 4′	50′	adit	610	..	610	31,022	32,682	1	2	3	hand	..	..	..	..	29/2/90
Prince Alfred No. 2, Papakaio		15	″	2	9′	″	E. 10° S. 1 in 5	″	1	4′ x 4′	90′	″	1,050	..	1,050			1	3	4	″	..	..	..	..	29/2/90
St. Andrews, Papakaio ..	Nimmo, John ..	13	″	1	8′	7′	E. 15°	″	1	4′ x 2′ 6″	60′	″	1,768	..	1,768	13,480	15,248	1	5	6	horse	..	..	..	..	27/2/90
Ngapara, Ngapara	Nimmo, G. S. ..	13	″	1	18′ to 25′	7′ to 8′	N. 5° E. 1 in 4	″	1	6½′ x 4½′	15 ch	″	851	..	851	10,276	11,127	1	2	3	″	..	..	..	..	7/2/89
Shag Point, Palmerston S. ..	Williams, W. H.	28	pitch	2	2′ to 12′ &1′ to 4′	all	E. 1 in 4	″	2	16′6″ x 6′ 6′8′ x 5′	200′ 210′	shaft	6,690	1,124	7,814	220,428	228,242	20	50	70	engine	..	..	..	..	28/7/91
Early Bank, Otepopo ..	Ramsay, G. ..	1	brown	1	3′ to 9′	″	E. 1 in 9	″	1	4′ x 2′	66′	″	150	..	150	..	150	..	2	2	horse	..	..	..	..	5/2/92

Herbert, Ctepopo	Love, A. ..	..	brown	1	5′	all	..	ditto	..	..	..	adit	292	..	292	..	292	..	2	2	hand	..	..	..	..	5/2/92
Allandale, Shag Point ..	McIntosh, A. ..	4½	pitch	1	7′	6′	..	„	1	5′ 6′ x 5″	350′	engine-plane	9,271	1,464	10,735	11,408	22,143	6	34	40	engine	5½	6″	60′	natural	28/7/91
Rough Ridge	McLean, L. ..	5	lignite	1	30′	30′	N. 5°	open	..	..	..	..	1,105	..	1,105	3,251	4,356	2	..	2	„	..	..	..	..	29/7/91
Idaburn, Rough Ridge ..	White, J. ..	21	„	1	23′	all	N. 30° W. 3°	„	..	..	..	..	1,676	..	1,676	22,143	23,819	2	..	2	„	..	..	..	..	28/4/91
Border Mine, Rough Ridge ..	Turnbull, G. ..	21	„	1	20′	„	N. W. 20°	„	..	..	..	..	200	..	200	1,913	2,113	1	..	1	..	..	..	..	..	28/4/91
Blackstone Hill, Hill's Creek	Dunsmuir, A. ..	25	„	1	8′	„	N. 70° W. 5°	„	..	..	..	..	150	..	150	365	515	1	..	1	..	..	..	..	..	28/4/91
Cambrian (Jones's), Cambrian	Jones, J. R. ..	30	brown	1	40′	30′	W. 10°	„	..	..	..	..	1,033	..	1,033	12,865	13,898	3	..	3	..	..	..	..	..	28/4/91
Cambrian (Dungey's), Cambrians..	Dungey, C. ..	7	„	1	20′	all	N. W. 3°	„	..	..	..	..	965	..	965	4,846	5,811	2	..	2	..	..	..	..	..	28/4/91
Kyeburn, Kyeburn ..	McCready, D. ..	18	„	1	10, 15, and 20′	„	S. 45° W. 40°	narrow	1	3′ x 2′	60′ & 4′ x 5′ 500′	adit	230	100	330	14,245	14,575	2	..	2	hand	..	..	..	shaft	27/4/91
Commercial (No. 2), Kyeburn	Archer, C. ..	9	„	1	14′	8′	S. 45° W. 70°	open	1	6′ x 4′	25′	shaft														
Perseverance, Kyeburn ..	Archer, C. ..	12	„	1	8′	all	S. 45° W. 40°	narrow	1	6′ x 4′	500′	adit	405	..	405	7,613	8,018	1	1	2	..	..	..	..	..	27/4/91
Commercial (No. 1), Kyeburn	Archer, C. ..	2	„	1	5′	„	..	„	..	6′ x 4′	200′	„														
Alexandra, Alexandra ..	Thomson, W. ..	12	„	1	14′	5′ 6″	E. 20° E. 1 in 7½	bord and pillar	1	5′ x 2½′	60′	shaft	650	..	650	12,389	13,039	1	2	3	horse	..	..	..	natural	12/7/90
Macqueenville, Alexandra ..	Lett, Robt. ..	5	„	1	14′	5′	S. 75° W. slight	ditto	2	3′ x 4′ 9″	80′	„	448	..	448	5,674	6,122	1	1	2	„	..	..	..	„	12/7/90
Waikerikeri, Clyde ..	Holt, W. J. ..	10	„	3	6′	all	S. 1 in 1	stoping	1	6′ x 3′	92′	„	401	..	401	18,449	18,850	1	1	2	„	..	..	..	„	20/1/91
			„	1	unknown	„	S. 45° E. 45°	bord and pillar	1	4′ x 3′ 6″	60′	adit	7	..	7	3,723	3,730	1	..	1	hand	..	..	..	..	20/1/91
Dairy Creek, Clyde ..	Marie, T. C. ..	20																								
Excelsior, Cromwell ..	Burrowes, J. ..	10	„	1	17 to 18′	10′	E. 6° S. 60°	toping	1	4′ x 6′	40′	„	700	..	700	2,712	3,412	..	2	2	horse	..	..	..	..	4/5/91
Nullu Secundus	Parcill, W. ..	3½	„	1	10′	6′	S. 40° W. 5°	bord and pillar	1	6′ x 4′	50′	„	..	..	..	632	632	..	..	..	hand	..	..	..	..	4/5/91
Bannockburn, Bannockburn	Wilson, T. ..	2	„	1	6 to 7′	all	flat	ditto	1	6′ x 4′	20′	shaft	109	..	109	..	109	..	2	2	horse	..	..	..	..	4/5/91
Kawarau, Cromwell ..	Pryde, J. ..	14	„	1	8′	„	N. 1 in 4½	„	1	6′ x 6′	34′	incline	1,600	..	1,600	11,774	13,374	..	4	4	„	..	..	..	..	4/5/91
Gibston, Gibston	Cowan, J. ..	24	pitch	4	5′ each	„	W. 22½°	narrow	1	6′ x 5′	80′	adit	1,000	..	1,000	14,883	15,883	..	2	2	hand	..	..	..	..	6/5/91
Saddle, Gibston	Macale, M. ..	5	„	1	7′	„	S. 60° W. 35° to 40°	„	..	7′ x 7′	420′	„	..	..	..	1,274	1,274	..	..	..	„	..	..	..	..	6/5/91
Cardrona, Crown Ridge ..	Robinson, W. ..	7	„	1	20′	„	W. 35°	open	..	..	..	..	900	..	900	1,840	2,740	3	..	3	..	..	..	..	..	18/4/92
Jones's, Roxburgh	Jones, J. ..	21	lignite	1	unknown	20′	W. 1 in 7	„	..	..	..	..	1,500	..	1,500	5,271	6,771	4	..	4	..	..	..	..	..	22/7/91
Perseverance, Roxburgh ..	Craig, James ..	4	„	1	„	10′	..	„	..	..	..	..	654	..	654	2,086	2,740	2	..	2	..	..	..	..	..	22/7/91
Mrs. McPherson's, Roxburgh	Kirkwood, R. ..	21	„	1	„	18′	..	„	..	..	..	..	1,542	..	1,542	263	1,805	3	..	3	..	..	..	..	..	22/7/91
Fernhill, Chain Hills ..	Gray, James ..	14	brown	1	19′ 6″	7′	N. 10° E. 1 in 10	bord and pillar	1	4′ 9″ x 3′ 6″	..	adit	4,085	2,239	6,324	83,729	90,053	5	15	20	horse	..	..	..	..	28/5/91
Saddle Hill (Christie's No. 2), Saddle Hill	Christie, J. ..	17	„	1	19′ 6″	10′	E. 1 in 10	ditto	3	5′ x 2′	50′	„	1,375	1,769	3,144	72,447	75,591	1	4	5	„	..	..	..	..	9/6/91
Glenochiel, Saddle Hill ..	Bryce, D. ..	10½	„	1	16	7′	varies	„	1	8′ x 4′	43′	..	1,506	50	1,556	5,598	7,154	3	3	6	„	..	..	..	..	10/6/91
Walton Park, Green Island ..	Loudon, J., General Manager; Shore, T., Mine Manager	21	„	1	17′	8′	E. 1 in 9	„	3	11′ x 4′ 12′ x 4½′ 6′ x 4½′	175′ 173′ 25′	shaft	13,819	4,318	18,137	387,965	406,102	8	43	51	engine	4′	9¾″	170′	furnace	5/6/91
Abbotsford, Abbotsford ..	Green, G. R. ..	10½	„	1	6′ to 10′	6′ to 8′	E. 10° N. 1 in 10	„	5	4′ x 4′ 4′ x 4′ 5′ x 3½′ 6′ x 4′ 10′ x 4′ engine-plane 15 chains	45′ 80′ 120′ 140′ 140′	engine-plane	11,495	2,916	14,411	149,090	163,501	9	32	41	engine & horse	12″	5″	161′	steam	4/6/91

Statistics of Workings in Coal-mines, 1891—*continued.*

Middle Island—*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 1890.			Approximate Total Output to 31st December, 1890.	Approximate Total Output to 31st December, 1891.	Number of Men ordinarily employed.			Power used for drawing Mineral.	Pumps.			Means of Ventilation.	Date of Inspector's Last Visit.
										Size of Shaft or Tunnel.	Depth of Shaft or Length of Tunnel.		Coal.	Slack.	Total.			Above.	Below.	Total.		Stroke.	Size of Barrel.	Height of Column.		
Otago—*continued.*													Tons.	Tons.	Tons.	Tons.	Tons.									
Mosgiel, Mosgiel	Sneddon, James ..	8	„	1	15′	7′	S. 1 in 10	bord and pillar	2	4′ x 4′ 6′ x 4′	27½′ 32′	engine-plane	1,460	4,800	6,260	24,456	30,716	4	7	11	engine	syphon	..	natural	29/5/91
Brighton, Brighton ..	Walker, James ..	5	„	1	6′ to 8′	6′	S. 80°	ditto	1	3′ x 2½′	20′	adit	347	..	347	1,622	1,969	1	1	2	horse	..	2″	20′	„	11/6/91
McColl's, Brighton ..	McColl, D. L. ..	3	„	1	5′	all	E. 12° 1 in 12	„	1	6′ x 4′	30′	„	139	..	139	129	268	1	1	2	„	..	..	..	..	11/6/91
Bruce (No. 2), Milton ..	Hardwick, N. ..	17½	„	1	20′	6′ to 7′	N. 30° E. 10°	„	1	4½′ x 4½′	25′	„	850	400	1,250	18,637	19,887	1	3	4	„	..	..	..	..	16/7/91
Bruce, Milton	Hardwick, N. ..	16½	„	1	12′ 6″	6′	varies	„	1	4′ x 3′	20′	„														
Real Mackay, Milton ..	Young, A. ..	23½	„	1	20′	10′	N.E. to E. 1 in 8	„	1	4½′ x 3′	34′	..	786	..	786	15,425	16,211	..	3	3	horse	..	..	..	..	16/7/91
Wallsend, Lovell's Flat ..	Hewitson, R. ..	21	lignite	1	20′	all	S. 20° W. 1 in 4	open	..	..	..	..	700	..	700	5,390	6,090	2	..	2	..	..	..	..	..	17/7/91
Gibson's, Lovell's Flat ..	Spence, T. ..	2	pitch	1	20′	6′	..	..	2	11′ x 4′ 8′ x 4′	320′ 250′	shaft	84	..	84	5	89	4	6	10	engine	tank	..	..	..	17/7/91
Elliot Hill, Lovell's Flat ..	Magee, P. ..	3	brown	1	25′	7′	E. 15° to N. 5°	..	..	6′ x 4′	90′	adit	337	..	337	991	1,328	..	1	1	horse	..	..	..	..	17/7/91
Adams Flat, Adams Flat ..	Reid, J. ..	9	lignite	1	14′	10′	S. 45° E. 12½°	open	..	..	..	..	..	..	..	1,083	1,083	..	..	..	..	..	..	..	..	..
Benhar, Benhar	Nelson, J. ..	28	brown	1	30′	8′	S. 17°	bord and pillar	1	x 4′ 8′ x 6′	48 462	„	2,848	573	3,421	62,310	65,731	1	4	5	engine	..	..	..	..	13/2/91
Morrison's, Benhar ..	Morrison, J. ..	4	pitch	1	15′	7′	S. 12°	ditto	1	8′ x 6′	100	„	..	..	..	646	646	..	..	..	hand	..	..	..	..	13/2/91
Rigfoot, Benhar	Aitken, T. ..	5	brown	1	18′	10′	S. 12°	„	..	6′ x 8′	240′	adit	539	65	604	1,933	2,537	1	1	2	horse	6″		72′	natural	13/2/91
Kaitangata (No. 1), Kaitangata	Watson, W. P. Gen. Manager	15	pitch	1	30′	20′	W. 45°	„	1	13′ x 5′ 6″	392′	shaft	42,323	16,622	58,945	570,106	629,051	13	108	121	engine	2′	5″	250′	furnace	1/10/91
Kaitangata (No. 2), Kaitangata	Shore, Wm. M. Mine Manager	8	„	1	10′ to 30′	25′	W. 1 in 4	„	1	6′ diam.	210′	engine														
Castle Hill (No. 1), Kaitangata	Carson, M. ..	4½	„	1	12′ to 14′	8′	N. 20° E. 14°	„	1	3′ 9″ x 2′ 6″	54′+4′	adit	1,176	247	1,423	2,740	4,163	1	3	4	horse	..	..	..	..	29/10/91
Wangaloa, Kaitangata ..	Smith, J. ..	11	„	1	10′ 6″	10′	E. 1 in 6	„	..	..	..	„	15	4	19	906	925	..	1	1	hand	..	..	..	..	29/9/91
Lismahagow, Kaitangata ..	Sewell, R. M. ..	10	„	1	4′	all	N. slighty	„	..	..	..	„	147	..	147	1,091	1,238	..	1	1	„	..	..	..	..	29/9/91
Crofthead, Kaitangata ..	Mackie, E. ..	5	brown	1	12′	8′	N. 20° E. 10°	„	..	6′ x 5′	396′	„	1,000	..	1,000	3,332	4,332	1	2	3	horse	..	..	..	..	29/9/91
Waikoikoi, Cullin's ..	Cullen, J. ..	4	lignite	1	4′	all	N. 50°	open	..	..	..	open	2	..	2	60	62	..	..	1	..	..	..	..	..	3/10/91
Mainholm, Waipahi ..	Lischmer, F. ..	5½	„	1	15′	„	E. 30°	„	..	..	..	..	1,500	..	1,500	2,800	4,300	3	..	3	horse	..	..	..	..	7/4/92
Robin Hood, Pine Bush ..	Trotter, R. A. ..	10	„	1	15′	„	..	„	..	..	..	open	162	..	162	..	162	1	..	1	..	..	..	..	..	12/8/91
Munro's, Wyndham ..	Munro, E. ..	4	brown	1	10′	„	..	„	..	..	..	..	850	..	850	1,500	2,350	1	..	1	..	..	..	..	..	6/8/91

Parratt's, Menzies' Ferry ..	Shields, W. ..	6	lignite	1	6′	all	level	〃	..	..	..	〃	..	..	..	604	4,820	..	..	..	..	..	..	..	..	
Menzies' Ferry, Menzies' Ferry	Shields, W. ..	11	〃	1	6′	〃	〃	〃	..	..	..	〃	..	..	..	3,666										
Smyth's, Gore	Shields, W. ..	5	〃	1	10′	10′	W. 10°	〃	..	..	..	〃	..	..	..	550										
Lieze's Gore	Lieze, M. ..	12	〃	1	6′ to 7′	6′	S.E. 5°	〃	..	..	..	〃	..	..	..	1,025	1,025	..	..	..	..	..	..	..	..	6/12/89
McKinnon's, Gore	McKinnon, A. ..	10	〃	1	5′	all	level	〃	..	..	..	〃	132	..	132	1,804	1,936	1	..	1	..	..	..	..	..	6/12/89
Hoffmann's, Gore	Hoffmann, J. ..	8	〃	1	10′	〃	N. 12°	〃	..	..	..	〃	..	..	..	2,349	2,349	..	..	..	..	..	..	..	..	6/12/89
Green's mine, Gore.. ..	Stark, J. ..	3	〃	1	19′+	10′	..	〃	..	..	..	〃	1,303	..	1,303	2,125	3,428	2	1	3	..	..	..	..	..	30/6/90
Croydon, Croydon	Smyth, William..	2½	〃	1	12′	all	S. 60°	〃	..	..	..	〃	100	..	100	536	636	1	..	1	..	..	..	..	..	30/6/89
Heffernan's, Gore	Heffernan, P. ..	13	〃	1	12′	〃	N. 15°	〃	..	..	..	〃	49	..	49	727	776	1	..	1	..	..	..	..	..	1/7/90
Sarginson's, Waikaka ..	Sarginson, J. H...	5½	〃	1	9′	8′	N. 20°	〃	..	..	..	〃	290	..	290	290	580	4	..	4	..	..	..	..	..	1/7/90
Chatton (Pacey), Chatton ..	Pacey, W. R. ..	15	〃	1	30′	20′	S.E. 1 in 6	〃	..	..	..	〃	555	..	555	5,248	5,803	2	..	2	..	..	..	..	..	6/8/91
Chatton (Pemble), Chatton ..	Pemble, Henry ..	14	〃	1	16′ to 26′	16′ to 18′	90° strike	〃	..	..	..	〃	265	..	265	10,265	10,530	1	..	1	..	..	..	..	..	18/7/90
Perseverance, Chatton ..	McKenzie, James	5	〃	1	16′	′ 9	N. 20° W. 15°	bord and pillar	..	8′ x 4′	330′	adit	655	..	655	1,177	1,832	1	1	2	horse	..	..	..	..	2/10/91
Pukerau, Chatton	O'Hagan, C. ..	11	〃	1	16′	10′	W. 1 in 10	ditto	..	6′ x 7′	496′	〃	607	..	607	17,503	18,110	..	2	2	〃	..	..	..	..	2/10/91
Dudley's Chatton	Dudley, J. W. ..	2		1	16′	16′	..	open	..	..	..	open	350	..	350	..	350	1	..	1	..	..	..	..	..	2/10/91
Frank's Pukerau	Mapp, R. ..	1	〃	1	6′	4′	level	tunnel	..	..	..	adit	15	..	15	..	15	..	..	1	..	..	..	..	..	..
Valley Road, Pukerau ..	Orchard, G. C. ..	2	〃	1	12′	10′	..	open	..	..	..	...	356	..	356	..	356	3	..	3	..	..	..	..	..	3/10/91
SOUTHLAND.																										
Otama, Otama	Hunter, T. ..	6½	〃	1	2′ 8″	all	N.E. 5°	open	..	..	..	..	253	..	253	543	796	1	..	1	..	..	..	..	..	7/12/89
Waimea, Riversdale ..	Carmichael, J. ..	6½	〃	1	12′	〃	N. 10°	〃	..	..	..	..	..	..	..	3,086	3,086	..	..	..	..	..	..	..	..	13/5/89
Mataura (Beattie), Mataura..	Hunter, T. ..	16	〃	1	16′	〃	N.W. 4°	〃	..	..	..	..	837	..	837	16,775	17,612	2	..	2	..	5″	6″	26′	..	14/8/91
Mataura (Town), Mataura ..	Town, C. ..	5	〃	1	16′	〃	N. 70° W. 5°	〃	..	..	..	..	750	..	750	5,134	5,884	1	..	1	..	6″	4″	15′	..	14/8/91
McGowan's, Mataura ..	McGowan, F. ..	3	〃	2	4′	〃	N. 70° W. 1 in 8	〃	..	..	..	..	..	..	..	113	113	..	..	..	..	..	..	..	..	14/8/81
Sleeman's, Mataura ..	Sleeman, C. P. ..	2	〃	1	17′	17′	N. 70° W. 3°	〃	..	..	..	..	2,000	..	2,000	2,000	4,000	3	..	3	water-wheel	10″	6″	25′	..	14/8/91
Sleeman's, Mataura ..	Sleeman, C. P. ..	4½	〃	1	4′	all	N. slight	〃	..	..	..	..	..	..	..	245	245	..	..	..	..	..	..	..	..	1/7/90
Townshend's, Mataura ..	Townshend, E. ..	8	〃	1	12′	8′	level	〃	..	..	..	..	20	..	20	243	263	1	..	1	..	..	..	..	..	14/8/91
Mutch's Mataura	Mutch, J. C. ..	1	〃	1	4′	4′	〃	〃	..	..	..	..	35	..	35	..	35	1	..	1	..	..	..	..	..	14/8/91
Edge's, Waikaka	Edge, A. A. ..	13	〃	1	8′ to 12′	all	N. 60° E.	〃	..	..	..	..	317	18	335	890	1,225	1	..	1	..	..	..	..	..	7/12/89
No. 14, Waikaka	Edge, W. H. ..	4½	〃	1	8′ to 7′	4′	W. 35°	〃	..	..	..	..	100	..	100	240	340	1	..	1	horse	..	..	..	..	7/12/89
Nightcaps (No. 1), Nightcaps	Handyside, W., Gen. Manager	11	pitch	1	15′	all	N.E. 1 in 7 to 1 in 2½	bord and pillar	..	6′ x 4′	130′	adit														
Nightcaps (No. 2), Nightcaps	Lloyd, J., Mine Manager	9	〃	1	8′	〃	N.E. to E. 1 in 4 to 1 in 6	ditto	..	5′ x 4′	55′	engine	14,485	..	14,485	94,956	109,441	17	16	33	engine & horse	..	..	..	furnace	19/9/91
Nightcaps (No. 3), Nightcaps		3	〃	1	12′	〃	S. 80° E. 50°	〃	..	5 diam.	60′	plane														
Wairio, Nightcaps	Lloyd, J. ..	10	〃	1	9′	〃	N.E. 50° E. 10°	〃	..	6′ x 6′	3ch.	adit	93	..	93	2,909	3,002	1	3	4	horse	..	..	..	natural	19/9/91
Wallace Pit, Morley Village..	Reid, William ..	6	〃	1	3′ to 9′	〃	S. 80° E. 5°	open	..	..	..	open	600	..	600	1,865	2,465	4	..	4	..	8″	5″	18″	〃	19/9/91
Reliable No. 1, Morley Village	Boaszier, J. ..	4½	〃	1	10′	〃	S. 80° E. 5°	〃	..	..	..	〃	224	..	224	1,357	1,581	2	..	2	..	..	..	..	..	19/9/91
Reliable No. 2, Morley Village	Boaszier, J. ..	3	〃	1	4′	〃	N. 60° E. 5°	〃	..	..	..	〃														
Hokonui, Winton	Lindsay, W. ..	5	〃	1	8′	5′ 6″	W. 14°	bord and pillar	..	..	..	adit	..	..	..	8,649	8,649	..	..		horse	..	..	..	..	5/9/91
Fairfax, Fairfax	Graham, P. S. ..	13	lignite	1	5′ 6″	all	N. 60° W. 4°	ditto	..	..	..	〃	768	..	768	7,367	8,135	..	2	2	hand	..	..	..	..	8/10/91
Isla Bank, Fairfax	Slattery, M. ..	11	〃	1	6′	〃	N.W. 5°	open	..	..	..	open	530	..	530	1,420	1,950	2	..	2	..	..	..	..	..	8/10/91
Orepuki, Orepuki	Love, A. ..	6	pitch	1	22′	9′	S.E.	stoop & room	1	7′ x 8′	120′	adit	180	..	180	4,828	5,008	..	3	3	horse	16″	..	..	natural	16/9/91

Statistics of Workings in Coal-mines, 1891—*continued.*

MIDDLE ISLAND—*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 1890.			Approximate Total Output to 31st December, 1889.	Approximate Total Output to 31st December, 1891.	Number of Men ordinarily employed.			Power used for drawing Mineral.	Pumps.			Means of Ventilation.	Date of Inspector's Last Visit.
										Size of Shaft or Tunnel.	Depth of Shaft or Length of Tunnel.		Coal.	Slack.	Total.			Above.	Below.	Total.		Stroke	Size of Barrel.	Height of Column.		
SOUTHLAND—*continued.*													Tons.	Tons.	Tons.	Tons.	Tons.									
Popham's Cluny, Orepuki ..	Popham, James ..	3	pitch	1	10′	5′	S. 12½° W. 80°	open	..	..	..	adit	6	..	6	150	156	1	..	1	horse	..	..	..	..	16/9/91
Owaka, Catlins	Cropau, W. ..	1	..	..	..	..	..	..	..	..	..	..	95	..	95	..	95	..	..	..	..	..	..	..	..	..
Kawai Pass	Taylor, — ..	1	..	1	3′ 6″	all	..	..	..	..	..	adit	229	..	229	..	229	..	2	2	..	..	..	..	natural	6/3/92
Salisbury, Taririe	Hunter, J. ..	1	lignite	1	12′	6′	..	..	1	5′ x 6″	264	″	1,421	..	1,421	..	1,421	1	3	4	..	..	..	..	″	16/6/91
Waikaka, Hoffman's ..	Hoffman, J. ..	9	″	1	8′	all	east	open face	..	..	..	open face	66	..	66	2,349	2,415	1	..	1	..	..	..	..	..	..
Adams Flat	Reid, J. ..	9	″	1	14″	″	S. 45° E. 12½°	″	..	..	..	..	160	..	160	1,083	1,243	1	..	1	..	..	..	..	..	28/8/89
Waimea, Riversdale ..	Carmichael J. ..	6½	″	1	6″	″	N 10°	″	..	..	..	..	625	..	625	3,086	3,711	3	..	3	..	..	..	..	..	..
Waimea, Riversdale ..	Smith, John ..	1	″	1	5″	″	flat	″	..	..	..	..	100	..	100	..	100	1	..	1	..	..	..	..	..	..
Edendale, Muir	McDonald, Alex.	1	″	1	5″	″	″	″	..	..	..	..	204	..	204	..	204	1	..	1	..	..	..	..	..	6/8/91
Mount Linton	Knight, Thos. ..	1	brown	1	10′	8′	S.W.	″	..	..	..	..	62	..	62	..	62	1	..	1	..	..	..	..	..	9/10/91
													571,428	97,366	668,794	6,154,850	6,823,644									
Output from fifteen mines included in statement for 1890 but whose operations were suspended prior to 1890													..	..	..	135,813	135,813									
																6,290,663	6,959,457									
Output from mines included in former statements, and whose operations were suspended prior to 1889																..	172,529									
																	7,131,986									

NOTE.—The approximate total to 31st December, 1890, includes 6,518 tons omitted from last year's statement.

HENRY A. GORDON, M.A. Inst. M.E., Inspecting Engineer.

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