

1880.

NEW ZEALAND.

# CONTROL AND INSPECTION OF MINES

(REPORT ON.)

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

To the Hon. RICHARD OLIVER, Minister of Mines.

SIR,—

Mines Department, Wellington, 15th July, 1880.

I have the honor to forward for your information the following Report upon the official control and inspection of mines under “The Regulation of Mines Act, 1874,” showing what has been done towards administering the Act, &c., since the date of my last general report of the 18th of July, 1879; with an appendix containing interim and annual reports of inspections of coal mines, with reports of the latest inspections, and statistical tables further referred to in my report.

I have, &c.,

OLIVER WAKEFIELD,

Under Secretary for Mines.

## REPORT.

### INTRODUCTION OF THE ACT.

It is necessary that I should state, by way of preface, that the bringing into force an Act having for its object the prevention of accidents incident to an industry which perhaps of all others is surrounded by the most dangerous conditions, is a matter requiring careful judgment both with regard to the financial interests of mine owners on the one hand, and the necessity of enforcing provisions to ensure the safety of the mines on the other.

“The Regulation of Mines Act, 1874,” was brought into force a year and four months ago, and although it had been previously reported that the introduction of this Act would be received with such disfavour throughout the Colony, that I believe former Governments hesitated to deal with the question until the explosion at the Kaitangata coal mine, reported last year occurred, I am glad to be able to state that up to the present time coal mine owners and managers generally have not only accepted the Act as a necessity, but have recognised the benefit which must accrue to themselves and all persons employed in the mines by adopting a system calculated as far as possible to prevent accidents and to ensure the safe working of the mines.\*

### PROPOSED AMENDED ACT NOT BEING INTRODUCED, INSPECTORS DEFINITELY APPOINTED TO PROCLAIMED MINING DISTRICTS, &c.

As an amended Act was proposed soon after the present Act was brought into force, in my first instructions to Inspectors, I directed them to use their judgment

\* This is proved by the fact that in some of the mines where fire-damp has not occurred, safety lamps have been procured against emergency, and in others a second outlet has been finished in cases in which it is provided that this need only be completed within two years of the passing of the Act.

in exercising their powers so as not to render the operation of the Act unnecessarily arbitrary or vexatious in cases of real difficulty in complying with its provisions. Later, however, as the proposed amended Bill was not introduced (owing to Parliament being occupied with other matters), I took steps to complete the promulgation of the general rules contained in the Act, and instructed the Inspectors to be more particular in enforcing the provisions of the Act, and in seeing that the special rules established under it were complied with in all cases where necessary. Having regard to the apparent necessity referred to above of enforcing the Act by a gradual process, and in view of a proposed amended Act, the three Inspectors were at first appointed generally, and not to particular districts, Messrs. McLaren and Cox having charge of the North Island coal mines, and Mr. Binns those of the South Island; but as soon as it was definitely decided to make the inspection of mines as complete as possible under the present Act, all districts in which coal mines occur were, under recent instructions, proclaimed mining districts in accordance with section 4 of the Act, Mr. Inspector McLaren being formally appointed respectively to the mining districts of Kawa-Kawa and Waikato, in the Provincial District of Auckland, and Mr. Inspector Binns respectively to those of Pelorus, Kaikoura, West Wanganui, Westport, Greymouth, Jackson's Bay, Malvern, Timaru, Otago, and Southland, in the South Island. A copy of the Proclamation of these districts follows this report. Mr. Inspector Cox, who is only paid a small salary for his duties as an Inspector, has made one inspection during the year of the North Island coal mines, in company with Mr. McLaren, as will be seen by their joint reports in the appendix. Mr. Cox is not at present attached to a district; but is available at Wellington in case of emergency, and for advice, as required. Mr. McLaren is located at Grahams-town, and Mr. Binns at Dunedin.

#### NUMBER OF COAL MINES, STATISTICS, &c.

Mr. Binns reports a large increase in the number of coal mines in the South Island during the year, and steps are now being taken to establish the Act, and general and special rules (where necessary) in these new mines.

In the North Island the number of coal mines remains the same, one of the Waikato mines having been worked out, and a new one which promises a more extensive area of coal having been opened by the same company upon the opposite side of the river.

The number of coal mines in the Colony shown in last year's report was thirty. This year ninety are accounted for. Many of these, however, in the South Island, making up the increased number, are upon a very small scale, some being open-work lignite mines, and some standing; but it is very possible that next year's report will show some of these mines to have developed into much larger concerns, and I agree with Mr. Binns, that the smallest coal mines should be subject to inspection as well as the others, especially as small mines are frequently worked upon a very bad system, and in other cases, where they are likely to open a more extensive area of coal, it is of the greatest importance that they should commence operations under efficient inspection.

A tabular statement of statistics of workings in coal mines, showing also the total output from the various mines for the year 1879, and the approximate total output from the coal mines in the Colony to the end of 1879, will be found in Return No. 1 to the appendix.

Following the plan adopted in my last report, I also append a statement (Return No. 2) of coal imports and exports for the year 1879, by the Secretary of Customs. This shows that 158,076 tons of coal were imported during the year, being 16,072 tons less than the quantity imported in 1878. Then again proceeding to comparisons, if we add the total output for the Colony during 1879 to the quantity imported, and deduct the export during the same period, assuming that the remainder has been consumed here, the total consumption in the Colony during 1879 would be 382,099 tons, or an increase over the consumption of 1878 of 49,654 tons; the increase of coal derived from mines in the Colony during 1879 being 69,000 tons over the quantity raised in 1878.

In addition to the important development of certain mines, with reference to inspection indicated by these figures, they also show that while during the year the import of coal has in some measure decreased, the quantity raised and consumed in the Colony has largely increased, and it will also be found that the Customs return shows an increased export, which may be significant of some further improvement in this trade as well as the home trade in coal.

#### ACCIDENTS.

A schedule of accidents in coal mines reported during the year will be found in Return No. 3, following the appendix. \* This shows that there have been reported six injurious, and two fatal accidents. Of the latter, the one calling for special additional remark here is that which occurred to John Broadfoot, at the Brunner mine, on the 3rd of March last. It appears from the evidence taken at the inquest that a Guibal fan had been erected to remove the foul air from the stone drift, and that Broadfoot was killed by an explosion of fire-damp while examining the working of the fan with a naked light.

Mr. Inspector Binns attended at the inquest, and reminded the manager that he had previously warned him and the owner of the mine, Mr. Kennedy, that an accident would occur if precautions were not taken, and special rule 30 as to the daily examination of the mine were not adhered to; but it did not appear from the evidence that the cause of the accident could be referred to any direct breach of rules.

It will be seen, however, from Mr. Binns's last report upon this mine, that a new manager has been appointed, and that Mr. Binns considers the ventilation sufficient for the present.

Mr. Kennedy, also, in writing to me upon this subject on the 22nd of April last, adds the following postscript:—"I may here mention that I have recently employed a manager, having a home certificate, who is also known to Mr. Binns to be well up in his profession. He is now daily expected here. This action has been taken as a precautionary measure to avoid as far possible any further casualty in our mine."

#### THE WORKING OF THE PRESENT ACT—ITS EFFECT. CONCLUSION.

In 1878, a Bill, known as Mr. Wason's Regulation of Mines Bill, was reported from the Goldfields Committee, and was intended to repeal "The Regulation of Mines Act, 1874," which had not then been brought generally into force. The chief object of Mr. Wason's Bill was to provide for certificated managers of mines; but Mr. Wason's Bill never became law, and the proposed amended Regulation of Mines Bill referred to in this report, and more particularly in my report of last year, also included this subject. I refer to this in order that I may state my opinion that, although the present Act, "The Regulation of Mines Act, 1874," does not provide for certificated managers, this difficulty will be got over by the fact of recent emigration of a better class from England, having brought to the Colony a number of experienced managers, holding home certificates, some of whom have already to my knowledge been employed by mine owners in preference to former managers less qualified.

It was also apprehended that Inspectors would find a difficulty in compelling the compliance of owners and managers with notices in certain cases; but under further experience of the present Act, it is found so far that owners and managers have a very wholesome dread of proceeding to arbitration as provided in Part V. of the Act, and that they infinitely prefer to remedy any defect complained of by an Inspector, under section 19, than to run the risk of incurring the heavy costs which might be the result of a tedious enquiry, after submitting the matter to arbitration. It may still, however, be necessary, as I pointed out in my last report, to provide some improved method of settling disputes (should such occur) between the Government and mine owners and managers. In very many cases,

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\* No doubt many accidents of an ordinary character have not been reported; but now that Inspectors have been placed in charge of districts, more full information about accidents will be obtained.

however, Inspectors have an immediate remedy under Part VI. of the Act, providing for penalties for offences, which penalties may be recovered in a summary manner.

I referred in my last report to the inspection of mines other than coal, including gold mines, and the position of this matter remains the same. Mr. Inspector McLaren inspects the gold mines at the Thames and Coromandel, being chiefly deep-level workings within a compact compass, under "The Gold Mining Districts Act, 1873," and his report upon these mines is included in the annual report upon the goldfields; but as the Government has decided not to undertake the inspection of the scattered gold mines in the South Island, which could not be done without an increased staff of Inspectors, "The Regulation of Mines Act, 1874," has not been introduced in any of these cases. The effect of the operation of the Act during sixteen months has been to induce a new feeling of responsibility on the part of coal mine owners and managers with regard to the method of working their mines, and this can only be increased in degree as the necessity of observing the Act becomes more apparent, and the Inspectors make more frequent inspections of mines within their districts.

Step by step the reins have been drawn tighter, and although the condition of many of the coal mines is by no means entirely satisfactory at the present time, a great deal has been done by owners and managers towards establishing precautions against accidents, both by the expenditure of money in effecting improvements for safety, and by the observance of rules designed to establish the better working of the mines.

Within eight months from the present date, it will be necessary, in accordance with section 10 of the Act, that many of these mines shall have a second opening to the surface as a means of egress for persons employed in the mine, and as I have already pointed out, the second outlet has now been completed in some cases.

The Kaitangata Railway and Coal Company's mine, which was the scene of a terrible explosion just before the Act was brought into force, is by the district inspector's latest reports considered to be in a satisfactory condition, and one of the reports shows that the company has been at great pains to effect improvements, and to observe the provisions of the Act.

Notwithstanding, however, these facts, and anything which the Government may do in the matter, accidents of the most serious nature may occur, and it is well that mine owners and managers, and all persons employed in and about the mines should keep the fact in mind that the real safety of their mines depends upon unceasing vigilance shown by themselves in taking every precaution against danger. It will not, however, be the fault of this Department if they are not constantly reminded of their duty in this matter.

OLIVER WAKEFIELD.

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*Proclamation of Mining Districts under "The Regulation of Mines Act, 1874."*

HERCULES ROBINSON, Governor.

A PROCLAMATION.—Whereas by "The Regulation of Mines Act, 1874," it is enacted that the Governor may, for the purposes of this Act, from time to time proclaim and define one or more mining districts within any province in which this Act shall be in force, with such boundaries as he may think convenient; and the Governor may from time to time alter the boundaries of any district, and he may also assign to such district a name by which it may be known for the purposes of this Act: Now, therefore, I, Hercules George Robert Robinson, the Governor of New Zealand, in pursuance and exercise of the power and authority contained in the hereinbefore in part recited Act, do hereby proclaim and declare that the mining districts within the Provincial Districts of Auckland, Marlborough, Nelson, Westland, Canterbury, and Otago, described in the Schedule hereto under the names set over each district, shall be mining districts within the meaning and for the purposes of "The Regulation of Mines Act, 1874."

SCHEDULE.

*Kawakawa Mining District.*—Comprises the Counties of Mongonui, Hokianga, Bay of Islands, Whangarei, Hobson, Rodney, Waitemata, Eden, and Manakau, including the Great Barrier, Waiheke, and other adjacent islands.

*Waikato Mining District.*—All that area bounded towards the North by the middle of the Waikato River and the Maramarua River to where the main road from Pukorokoro to Mercer crosses the last-mentioned river, thence by that road to Pukorokoro, thence by the Frith of Thames; towards the West by the Frith of Thames aforesaid and the Hauraki Gulf; towards the East, North, and again towards the East by the ocean to the 39th parallel of south latitude; towards the South by the 39th parallel aforesaid to the Ngahuinga or Tuhua River; again towards the West by a right line from thence to the source of the Mokau River; again towards the South by that river to the ocean; and again towards the West by the ocean to the Waikato River.

*Pelorus Mining District.*—All that area in the Provincial District of Marlborough situated north of the Wairau River, including D'Urville and other adjacent islands.

*Kaikoura Mining District.*—All that area in the Provincial District of Marlborough situated south of the Wairau River.

*West Wanganui Mining District.*—Comprises the Counties of Collingwood and Waimea, including the adjacent islands.

*Westport Mining District.*—Comprises the Counties of Buller, Inangahua, Amuri, Cheviot, and Grey, excepting that portion of the Grey County situated south of a line drawn from Harper's Saddle to the outflow of Lake Brunner, and of the Rivers Arnold and Grey.

*Greymouth Mining District.*—All that area bounded towards the North by the Grey River to the confluence of the Arnold River, thence by the Arnold River to Lake Brunner, and thence by a right line to the saddle at the source of the Hurunui and Teremakau Rivers; towards the East by lines along the summit of the Southern Alps to the source of the Weheka River; towards the South by the Weheka River to the ocean; towards the West by the ocean to the Grey River.

*Jackson's Bay Mining District.*—All that area bounded towards the North by the Weheka River to its source; towards the East by lines along the summit of the Southern Alps to Mount Aspiring; towards the South by a right line to the mouth of the Awarua River in Big Bay; and towards the West by the ocean to the Weheka River.

*Malvern Mining District.*—Comprises the Counties of Ashley, Selwyn, Akaroa, and Ashburton.

*Timaru Mining District.*—Comprises the Counties of Geraldine, Waimate, and that portion of the Counties of Lake, Vincent, and Waitaki, situated to the north of a right line drawn from Mount Aspiring to the issue of the Ohau River from Ohau Lake.

*Otago Mining District.*—All that area bounded towards the North by a right line from the mouth of the Awarua River in Big Bay to Mount Aspiring, thence by a right line to the issue of the Ohau River from Ohau Lake, thence by the middle of the Ohau River and Waitaki River to the ocean; towards the East and South by the ocean to the Mataura River; towards the West by the right bank of that river to its source at Eyre Peak, thence to Eyre Peak; towards the South-east by a right line to the confluence of the Windley River with the Oreti River; again towards the South by a right line due west to the Manipori Lake; again towards the East by that lake and by the left bank of the Waiau River to the ocean; again towards the South and West by the ocean to the Awarua River, the starting point.

*Southland Mining District.*—All that area bounded towards the North-west by a right line from the confluence of the Windley River with the Oreti River to Eyre Peak, thence to the source of the Mataura River; towards the East by the right bank of that river to the ocean; towards the South by the ocean to the Waiau River; towards the West by the left bank of that river and by the Manipori Lake to a point due west of the confluence of the Windley River with the Oreti River aforesaid; and towards the North by a right line due east to the said confluence, the starting point: including Stewart, Ruapuke, and other adjacent islands.

Given under the hand of His Excellency Sir Hercules George Robert Robinson, Knight Grand Cross of the Most Distinguished Order of St. Michael and Saint George, Governor and Commander-in-Chief in and over Her Majesty's Colony of New Zealand and its Dependencies, and Vice-Admiral of the same; and issued under the Seal of the said Colony, at the Government House, at Wellington, this twentieth day of April, in the year of our Lord one thousand eight hundred and eighty.

H. A. ATKINSON.

GOD SAVE THE QUEEN!

## APPENDIX.

### No. 1.

#### INTERIM REPORT UPON INSPECTION OF COAL MINES, NORTH ISLAND.

Mr. Inspector Cox and Mr. Inspector M'LAREN to the UNDER SECRETARY for MINES.

SIR,—

Auckland, 12th December, 1879.

We have the honor to inform you that we have visited the Waikato (Kupa-Kupa), Taupiri, and Bridgewater (Miranda) Collieries, and herewith forward our report on the same.

*Waikato (Kupa-Kupa) Mine.*—This mine is being carefully worked, and attention has been paid to Mr. M'Laren's instructions with regard to timbering certain wide levels. The main levels and headings are now being carried in with smaller dimensions, but the bords which are opened out from these are wide, and rise up from 6 feet or 7 feet in the levels to 18 feet and 20 feet in height in the bords, which, should the coal give off gas, would be dangerous. As the furthest bords have reached the crop of the

coal, no further extensions will be made, so that instructions to keep the bords narrow in future are unnecessary. The ventilation of the mine appears good; and, although the air is not directed to the faces, at the time of our visit there appeared to be a sufficient quantity of air at all the ends. The roof of the mine is protected by 4 feet 6 inches, or more, of coal being left in, above which the formation to the surface consists of clay. Some prospecting shafts which had been sunk on the property were not covered in, but before we left the manager had made preparations to have them filled in. The plan of the mine was in Auckland, at the office of the company, and there was no copy in the possession of the manager, as was also the case when Mr. M'Laren visited the mine before.

*Taupiri Mine.*—The plan of this mine was also in Auckland so that we were unable to see it, but when Mr. M'Laren visited the mine before it was in the possession of the manager. Throughout this mine the thickness of coal taken out has been too great, considering the running nature of the roof, and this renders itself especially apparent in the bords from Nos. 5, 3, and 1 headings, where, at many places the roof has been struck, and at others the thickness of coal left is only a few inches. Wherever the roof has been struck close timbering has been rendered necessary, and this has not always been sufficient to prevent falls, besides which, in many cases the timbering is imperfectly put in and is at places giving to the superincumbent pressure. When the work of drawing the pillars is commenced, a great loss of coal will probably ensue from this mode of working, and considerable care will have to be exercised in carrying on the work. The ventilation of the mine is very imperfect, and, although along the main airway the current is often sufficient to nearly blow out the candle, the air in the bords to the rise of the old workings is very bad, and were it not that at present but few men are employed in these old workings it would be absolutely necessary to take steps to guide the air round the faces.

*Bridgewater (Miranda) Colliery.*—At this mine the wire rope which is used for winding the mineral has been very imperfectly spliced within half a turn of the winding barrel when the cage is at the bottom of the shaft, and at this point half the strands of the rope have gone. The barrel on which the wire rope ( $1\frac{1}{4}$  inches) is coiled is too small, thus causing unnecessary wear on the rope, but as the manager objects to alter this no steps can be taken. The brake band attached to the winding gear is in a very unsafe condition, one side of the coupling being broken off at the fixed end, and the band itself being cracked half through at the lever end. There is no cover to the cage, but this shaft is not used for raising or lowering men. In the air shaft ladders have been fixed; the upper one stands on a platform from which a second ladder starts, the lower end of it resting on a narrow ledge of coal in the side of the shaft, the lowest ladder starting abruptly from the same point. It will be necessary to fix staples at the top of the two upper ladders, and at the foot of the second ladder either a platform should be erected, or a chamber cut in the face of the coal to ensure the safety of the miners. The seam of coal which is being worked at this mine is 53 feet thick, and until recently the upper 30 feet only of this was worked, and nearly all the coal which has been raised has been taken from close to the shaft, two headings put in towards the hill, cutting the roof of the coal at a short distance, and showing that the seam was crushed in that direction. Timber has been employed in these drives, and the manager informed us that they were unsafe to enter. Immediately around the shaft chambers, sometimes as much as 30 feet in height have been excavated, of course utterly precluding the employment of timber should it be found necessary, and also with the position of the two shafts rendering the future guiding of the air a matter of the greatest difficulty. Latterly, the workings have been carried on from a lower level in this seam, immediately below the old workings, leaving in some places only 6 feet of coal between the two levels to form the roof of the one and the floor of the other. The workings in this lower level are also in the immediate vicinity of the shaft which is accordingly weakened. To all appearance this mine is being worked on no principle; no plan of the workings exists, and without this it is impossible to say what extent of this 6 feet belt of coal has been left standing. As, however, the workings are still being carried on in the lower level, there is little doubt that before long a fall will occur in this mine if proper precautions are not taken. When such a large body of coal has to be worked, a well devised scheme for working it should be first arranged, for the result of such operations as have hitherto been carried on will, before long, be to close the mine and necessitate sinking at a fresh place. There are a number of prospecting shafts on the property, which are neither fenced nor covered in, and a horse fell into one of them the other day.

*General Remarks.*—Mr. M'Laren has written to the managers of the above collieries requesting that they will take steps to remedy such points as can be altered, and to take all reasonable precautions when the evil cannot be removed. At the Bridgewater colliery, we were informed, that no copies of the special rules had ever been forwarded to them, and we left a copy with the manager, but as they have to be circulated amongst the miners, and also posted, some fresh copies will be required. At the Taupiri mine, the code of rules was posted, and at the Waikato (Kupa Kupa) special rules were posted, but not the complete code printed by the Government.

We have, &c.,

The Under Secretary of Mines,  
Wellington.

S. HERBERT COX, Inspector of Mines.  
JAMES M. M'LAREN, Inspector of Mines.

## No. 2.

### INTERIM REPORT UPON INSPECTION OF COAL MINES, NORTH ISLAND.

Mr. Inspector Cox and Mr. Inspector M'LAREN to the UNDER SECRETARY for MINES.

SIR,—

Wangarei, 4th February, 1880.

We have the honor to inform you that we have visited the Kamo, Whau-Whau, and Kawa-Kawa mines, and enclose herewith our report on the same.

*Kamo Mine.*—The nature of the coal in this mine is very tender, and the greatest care is required to prevent small falls while the men are at work, in consequence of the cross cleat of the coal. The manager appears to be fully alive to the danger, and to be using every precaution to prevent accidents.

The character of the coal necessitates the employment of a considerable quantity of timber, notwithstanding which small falls have occasionally taken place, leaving the roof exposed to the air when it is inclined to shale off. The ventilation of the mine is generally good, but in a number of the headings the air was very hot, although not unworkably so. The manager is now carrying through new air courses, working at the same night and day, and as soon as these are completed, this evil will be remedied. The workings of this mine are not very extensive, and seem generally to be carried on with the safety of the miners in view, and in concordance with the provisions of the Act. A considerable quantity of slack (which is unsaleable) has been allowed to accumulate in the mine, and should this heat, although not immediately dangerous to life, might endanger the workings. In regard to the workings only general instructions could be given to the manager to exercise the greatest care and closest supervision to prevent falls of coal, which, from its nature would drop without giving much warning. No gas has as yet been seen in this mine.

*Whau-Whau Mine.*—The main entrance to this mine is through a long drive principally in the slate, and this from the mouth, inwards, for a considerable distance is timbered. This timbering being now old is getting rotten in places, and these insecure portions are being renewed. The old workings are generally in bad order, principally from the roof shaling off where exposed to the weather, for a height of about a foot above the coal. The coal in these old workings is generally of a tender nature, but in that portion of the mine now being wrought it is a good standing solid coal, and by leaving a portion of the coal to form a roof the air is prevented from acting on the green sandstone, which is readily affected by the air and is then liable to shale off. Large quantities of slack have also been left in the wastes of this mine, and part of this has heated and fired in consequence of the decomposition of the pyrites in the coal and roof, but by closing up all openings and preventing the admission of the air, the fire appears now to be extinguished, but the stoppings have not yet been removed. Very few men are working in this mine, and these few are exclusively employed in the new workings, and as the mine is being worked by a party of working miners, any instructions to wall-off or render secure the old workings, would have the effect of closing the mine, so that we have not considered it desirable to be harassing in the discharge of our duties in this case. The air in the new workings is good, but at one or two places it is not all that could be desired, and in many parts of the old workings it is very hot. A little black-damp is at present being given off from the area on fire, but not so much as to be felt in the workings. Messrs. Love and Dunsmuir, the lessees of this mine, are anxious to conform to the provisions of the Act as far as their means will allow, and are taking all reasonable precautions in their new workings. There was no sign of gas in the mine during our visit, and the proprietors assure us that they have never found the slightest trace of it.

*Kawa-Kawa Mine.*—When Mr. M'Laren last visited this mine all the lower workings were flooded. These, through the erection of additional pumping machinery, have now been freed from water, and the mine systematically wrought, the output being from 150 to 160 tons per day. The shaft in which sinking operations have been carried on for the last eighteen months or two years, has now bottomed on the coal at a depth of about 190 feet, and from this they are now driving up on the rise of the coal towards the wrought portion of the mine, and after this is accomplished, which will be in less than a month, the output will be considerably increased. A stone drift is at the same time being pushed forward at a depth of 19 feet below the coal, and this will allow of a large reservoir for the water in case the pumping machinery should get out of order, and will also render the workings drier under ordinary circumstances. The old workings in this mine are now all but impassable except in certain parts, but air is still taken through them and brought to the upcast of the present workings. The air in the new workings is taken down by the old incline, spread through the workings, and the return current is delivered by the new incline, at the end of which the new Tangye pump has been erected, and under ordinary circumstances the heat of the steam pipes is found to be sufficient to cause a good current of air, but on a close day a furnace is also lighted. On the day of our visit the air was very good throughout the workings. The coal now being wrought is very hard and is got out by blasting, but arrangements are made by which no shots are fired except at 3 o'clock, when they are all fired simultaneously and the mine is then left clear for about one and a half hours until the smoke has been drawn out, when the night shift starts. Generally speaking a sufficient quantity of timber appears to be employed in the mine, and with the exception of No. 1 level on the left of the new incline, the coal was standing well, but in this it was shaling off from the sides in places, the level being driven on the end of the coal. When the coal has been holed through from the sinking pit the air will take a different course from the present, but this does not need comment now. There is a great deal of water in this mine due to feeders, which are being struck along a line of fault which is being met with in the lower levels, and a considerable quantity of surface water also finds its way into the mine in consequence of the old workings having fallen in. Up to the present time no trace of gas has been discovered in the workings, and these are inspected every morning by the deputy overman before the men are allowed to go to their work, his report being entered in a book, which is kept for the purpose. The mine is in possession of safety lamps, which will be used in case of an emergency. A short time ago part of these workings caught fire in consequence of a fall of the roof, the pyrites in which by its decomposition generated sufficient heat to ignite one of the pillars. This fire was extinguished, but not permanently, by a stream of water which was taken by pipes from the top of the incline to the face, but it has since been found necessary to wall off the ignited area, and the fire appears now to be got under as all the stoppings are cool. This mine appears to be worked under careful supervision and the provisions of the Act complied with.

We have &c.,

The Under Secretary for Mines,  
Wellington.

S. HERBERT COX, Inspector of Mines,  
JAMES M. M'LAREN, Inspector of Mines.

## No. 3.

## ANNUAL REPORT UPON INSPECTION OF COAL MINES, NORTH ISLAND.

Mr. Inspector M'LAREN to the UNDER SECRETARY for Mines.

SIR,—

Grahamstown, 31st March, 1880.

In accordance with "The Regulation of Mines Act, 1874," I have the honor to forward report upon the inspection of coal mines in the Province of Auckland, for the portion of the year ending 31st December, 1879, during which I have had charge of the inspection of these mines; but as my inspections were made partly before, and partly after that date, I deem it advisable to give the latest information up to the date of this report.

Mr. Inspector Cox being in this district on his geological duties during the summer, I was much pleased to have his company and valuable assistance when inspecting the various mines during the months of December and January.

Since the date (17th July, 1879,) of Mr. Inspector Binns's report, there have been two mine accidents. The first of which was fatal, and occurred at the Waikato Colliery (Huntly,) on the 19th July, 1879. The second (non fatal) occurred at the Kawa-Kawa Colliery, on the 5th November, 1879. In regard to these accidents, I am glad to say, that in neither case, could any blame be attached to the management, nor in the first, or fatal case, could the unfortunate man who was killed be blamed, the accident occurring through a fall of coal in the place where the deceased was working, by a large piece of coal parting from the seam at what is known as a "sooty back," evidence of the existence of which was not apparent until after the accident, as its dip was off, instead of towards the workings. The man working as the mate of McGlynn, who was killed, had, it appears, shortly previous to the accident, sounded the portion of coal that fell, but did not detect anything to cause him alarm.

The men were undermining the seam for the purpose of obtaining a fall, but had not done so sufficiently to enter the sprags, and no suspicion of any particular danger was in their minds, everything looking safe, when the piece suddenly dropped from the face without giving any warning, killing McGlynn, and just missing his mate.

The second accident at the Kawa-Kawa Colliery was caused by a shot which hung fire, exploding after a man named Balero had returned to the spot. Three different holes had been charged in one of the bords, and the man returned after hearing two explosions, thinking that two of the shots had taken place simultaneously, giving one report; his mates wished to deter him from returning so soon, but he disregarded them, and the shot went off as he reached the place.

The accident was, however, not serious, he soon afterwards recovered and left the district.

It is gratifying to be able to state, that the mine managers have generally shown the utmost desire to carry out the provisions of the Act, so far as these affected their mines, and so far as I could observe, have been careful in enforcing that the men also carried them out, and have readily complied with any instructions that I may have given with a view to the greater safety of the men, or ventilation of the mines.

No trace of gas has been reported to me, as being found in any of the mines. With the exception of the Kawa-Kawa mine, none are in possession of safety lamps; I, however, think it should be made imperative that each mine should be in possession of one, so that in all cases, whether gas has been previously found in the mine or not, the first examination of the mine by the underviewer previous to the men being allowed to go to work for the day, be with a safety lamp, and not as at present with a naked light, this also applies to the examination of all old workings, or places not in use.

*Kawa-Kawa Colliery.*—Since the date of Mr. Binns's report, great difficulties have been encountered in this mine by a large influx of water, which I found on my first visit had completely flooded their lower workings. Although a large amount of pumping machinery was drawing the water, it was inadequate to clear it, therefore another 24-inch Tangye pump was procured and fixed before the water could be lowered, this necessitated a long delay and so curtailed the output that the demand for coal to a great extent could not be met, and there were sometimes about a dozen vessels waiting for cargo, at the coaling ground in the bay, many of these having to wait for over a month before being supplied. At the time of my visit with Mr. Cox, in January, the shaft, which had been in progress for over eighteen months, had been bottomed on the coal at a depth of 190 feet, and a drive was in progress towards the bottom of the new incline, this has since been holed through, allowing the water to go down to the large new pump in the shaft and effectually draining the mine, and also giving a splendid ventilation, which only requires guiding to the various workings. The new or No. 3 shaft is sunk to a depth of 228 feet 9 inches, through the following strata:—Soft clay and gravel mixed with limestone boulders, 81 feet; hard blue limestone, 97 feet; hard bed of pipi and cockle shells, 10 inches; hard blue limestone, 7 feet 10 inches; hard coal, 4 feet 3 inches; tough fireclay, 7 feet; hard clean coal, 5 feet 9 inches; soft fireclay (mud parting), 4 inches; hard clean coal, 2 feet 9 inches; hard sandstone, 3 feet; clay slate, 19 feet—Total, 228 feet 9 inches. The shaft has been sunk 22 feet lower than the under layer of coal, and a drive 200 feet in length put in at that level for the purpose of storing the water to prevent its rise in the shaft, should a stoppage of the pump at any time be necessary for repairs. It will be noticed that the coal is in two distinct layers where cut in the shaft, but in driving towards the upper level the fireclay entirely died out, showing that the coal which has been already worked as one seam is now distinctly divided. A large amount of difficulty attended the sinking of the shaft on account of the hardness of the limestone and the quantity of water to be contended with. Some of the water courses in the limestone cut in sinking through the rock gave a great deal of water, and kept the pump constantly employed to enable operations to be continued. A portion of the upper workings caught fire through the decomposition of the pyrites, and water being found ineffective, the ignited part was walled in, which seems to have completely extinguished it. Generally, the mine and machinery are in good and efficient order, and great care seems to be exercised in carrying out the provisions of the Act, the plan of the mine being kept up to date. The facilities for loading vessels will be greatly increased as soon as the railway to deep water is completed, the first contract for which is about to be let.



*Kamo Colliery Wangarei.*—Previous to Mr. Binns's visit to this mine, it had been worked by a party of working men, but soon after, it passed into the hands of a private company, who have opened up the mine, and are working it in a systematic manner, which had not been previously the case. On my first visit, I found the ventilation very indifferent, and that no plan of the mine and workings was in existence; on my pointing out to Mr. Kerr, the manager, the necessity of improving the ventilation, he proposed to me a new scheme, by putting in a fresh drive, which would enable him to carry air through the whole of the workings; I also pointed out the necessity of having the ground surveyed, and a plan made. On my second visit with Mr. Cox, the ventilation was somewhat improved, although not so good as was necessary, the new air drive not being completed, but was being pushed on both night and day. This drive has since been connected with the workings, and acts well, giving a good and steady current of air, which by proper guidance, will allow a larger extension of operations. The mine has also been surveyed, and a good plan made, a copy of which has been furnished to me. The nature of the coal in this mine is very tender, but the manager seems fully alive to the danger of falls, and is evidently taking great care for the safety of the men, by securing the ground well with timber, and also in working the mine in accordance with the Act. The workings have hitherto been carried on by a level driven into the hill, but the manager is about to extend the workings by sinking a shaft on the flat at the base of the hill for the purpose of developing a seam which is known to exist at a lower level. This company have shown considerable energy in supplying the market, notwithstanding the great difficulty in getting the coal carted a distance of four miles to Wangarei, over a very inferior road. For this purpose they have purchased a road engine, but on account of the poverty of the Road Board, or County, were obliged to expend a considerable amount of money on the road to enable it to bear the traffic. From the lightness of the foundation of the road, I, however, fear that it will not stand the heavy traffic during the winter, and from the slow progress of the railway works a considerable time must elapse before it can become available for carriage.

*Whau-Whau Colliery, Wangarei.*—This mine is held on lease by Messrs. Love and Dunsmuir, but the amount of work done has been very limited. They have furnished me with a plan of the mine. The old workings are not in a safe condition, but the whole of the coal got during the past year has been from new workings. They are careful to comply with the regulations and provisions of the Act as far as they can. It would be much better if the whole of the old workings were walled off, but I do not consider there is any immediate danger, and to give such instructions would mean the closing and abandonment of the mine. The ventilation of the new workings is very good and only requires proper guidance for a further extension of the same.

*Bridgewater Colliery, Miranda.*—This is the only mine at which my instructions have not been complied with, but this does not seem to be from any wish to evade the Act, but through want of funds and an immediate intention on the owners' part to dispose of the mine to a company, which is most necessary, as without funds a mine of this description cannot be developed. On my visit in December last, I gave instructions in regard to a number of matters, which I find have been carried out on further inspection in March, with the exception of the two most important items, viz., timbering and having the ground surveyed and a plan of the mine and workings made, without which there is no means of forming a correct opinion as to the safety of the mine. The seam of coal in this mine is 53 feet in thickness, and in order to work such an extensive mass of coal, a carefully devised plan of operations should first be laid down, instead of working as at present appears to be the case under no rule by which a clear decision as to the safety of the men can be come to. The coal is worked on two different levels, leaving a band apparently from 3 to 6 feet between, forming the floor of the upper and the roof of the lower workings. The upper levels are excavated to a height of about 30 feet, forming great chambers or caverns, precluding the use of timber for supporting the roof should that be required, and there is no means of ascertaining the thickness of coal left for a roof to give an idea of its stability. The lowest levels are supposed to be opened under those above, but there is no certainty they are so, and it is quite possible they are driving under what constitutes the pillars in the upper levels, which would cause imminent danger, and until accurate plans and sections are made this cannot be determined. I am now, however, taking steps to enforce the plans being made.\*

*Taupiri Colliery, Huntley.*—The coal in this mine is worked from a drive in the hill, and also from an incline sunk to drain the dip of the seam. The manager, Mr. Collins, has shown a desire to comply with my instructions, and has effected the better ventilation of the upper and older portion of the mine by opening communication with the surface. The ground overhead the workings of this mine consists of soft clay, and I found on my first visits several of the main workings to be dangerous through not having sufficient coal left to form a secure roof. I instructed immediate timbering, and in future that not less than 3 feet of coal be left unless they were prepared to close timber. These instructions have been carefully attended to by the manager. I also instructed him not to proceed with the drawing of pillars, on account of the danger, until he had given me due notice thereof that I might specially visit the mine. He did so, when I gave him general instructions, and on my subsequent visit I find he is drawing them successfully, and the upper part of the mine will therefore shortly be wrought out. A new incline from near the mouth of the present drive is being sunk in an easterly direction to work the seam of coal at a lower level than it has yet been opened; the length of this plane, when it reaches the workable coal, will be about 5 chains; for about 2 chains along its course the seam of coal is nearly crushed out, after which it opens out into a large seam over 30 feet in thickness, as has been ascertained by boring. To work this will necessitate sinking a new shaft for the purposes of drainage and ventilation, and in fact from the coal being crushed out for such a distance, the workings here may be considered an entirely new mine, and be separate and independent of the old workings.

† *Waikato Colliery, Huntley.*—The seam of coal in this mine is limited to a comparatively small area or basin, of which the crop has been reached all round, and they are proceeding with the drawing of pillars. When this is completed the mine will be wrought out. As this is the most dangerous operation

\* See telegram of 11th June, following this report.—O. W.

† See also letter of 31st May, following this report.—O. W.

in coal mining, more especially in this case when the coal is so near the surface and having a soft clay roof overhead. I intend shortly proceeding to this district to see that the operations are being carried out with safety, as where pillars have already been wrought out the ground has caved in from the surface. The principal coal on this company's estate lies on the opposite or west bank of the Waikato River, and from the positions indicated to me by the manager where he had sunk shafts there must be a very large area of coal. Preparations are now being made to work this mine, which is known as the Kupa-Kupa mine, and was formerly wrought to a small extent. A splendidly graded incline has been made from the mine to the river, and a large new main tunnel which for some distance has been timbered in a most substantial manner. The seam will average about 17 feet in thickness, and appears to be solid, good standing coal, having, I am informed, a good roof. From the plan of operations as proposed by the manager, there is every intention of working this mine in a systematic manner, though there may be some difficulty in regard to air until they get the ventilating drive completed. I am informed they intend at present to convey the coal across the Waikato River to the railway in barges, but considering the extent of coal to be wrought and the thickness of the seam, the cost of throwing a bridge across the river would be amply repaid.

The Under-Secretary for Mines,  
Wellington.

I have, &c.,  
JAMES M. M'LAREN,  
Inspector of Mines.

[TELEGRAM.]

Auckland, 11-6-80. To Under Secretary for Mines, Wellington.—New manager of Miranda Colliery telegraphs to me to-day in reply to my enquiries *re* plans "Engineers have been engaged *re* plans and sections required by you, will be ready end of next week."—J. M. M'LAREN, Inspector of Mines.

Mr. Inspector M'LAREN to the UNDER SECRETARY for MINES.

SIR,—

Inspector of Mines Office, Thames, 31st May, 1880.

Referring to portion of my general report of date 31st March, 1880, *re* Waikato Colliery. Huntley, I have the honor to inform you that on my last visit, on the 7th instant, I found the mine had become most dangerous. I advised the manager to withdraw the men and close the mine, showing him it would be better to leave the little coal that remained than run any further risk. He agreed with me, and promised at once to do so, after he had lifted the rails, &c. Before I left I saw the men withdrawn from the most dangerous parts. Being, however, afraid that he might be induced to try and draw more coal, I telegraphed to him from Auckland on the 10th instant as follows:—"Am anxious have you withdrawn the men and closed down the mine?" I received his reply that he had, and had shifted his men to the mine (Kupa-Kupa) on the west side of the Waikato River. The mine, therefore, known as the Waikato, is now wrought out and abandoned.

The Under Secretary for Mines,  
Wellington.

I have, &c.,  
JAMES M. M'LAREN,  
Inspector of Mines.

#### No. 4.

#### INTERIM REPORT UPON INSPECTION OF MINES, CANTERBURY AND OTAGO.

Mr. Inspector BINNS to the UNDER-SECRETARY for MINES.

SIR,—

Mines Department, Wellington, 12th September, 1879.

I have the honor to make the following interim report on the condition of the coal mines in Canterbury and Otago:—

*Springfield Colliery, Kowai Pass, Canterbury.*—"The Regulation of Mines Act, 1874," appears to be carefully observed at this colliery. Every morning all the working places are examined, and a mark left. A written report of the examination is made. The ventilation is pretty good; the roof very bad, but timber appears to be set where necessary. A plan is kept. Fire-damp is occasionally seen, and this, in conjunction with the bad roof, will render the greatest care necessary.

*Homebush Colliery, South Malvern, Canterbury.*—No steps have apparently been taken to observe the Act at this colliery. There is no plan. Special Rules have not been hung up. General Rule 23 has not been kept. No examination of the mine is made before the men enter, and the owners have not even one safety-lamp. Altogether the mine seems to be worked in a very careless manner. No fire-damp has as yet been found, but it is by no means certain that this state of things will continue for ever.

*Prince Alfred and St. Andrew's Coal Mines, Oamaru, Otago.*—These mines are both worked by Mr. Willetts. The Act is not observed in any respect; but as they are on a very small scale, with no shafts, no boys employed, and no machinery, the only points to be observed are section 17, and General Rule 23.

*Shag Point Coal Mine, Palmerston, Otago.*—Although no explosive gas has been found in this mine, it is by no means unlikely that such may some day exist; and this possibility, added to a bad roof, will render the greatest care necessary. Although the Act is not observed altogether—for instance, as regards sections 13 and 17 and General Rule 23—yet great care appears to be taken to prevent accidents. Every working place is examined before the men enter, and Mr. Williams, the manager, will in future see that a mark is made on the end of the place, and a report of the condition of the whole mine made in writing. I have also suggested that the wastes should be periodically examined. The ventilating shaft for the new mine is not yet down to the coal, and the air in those workings is not very good, but this will doubtless soon be remedied.

*Green Island Colliery, Otago.*—The following points required attention:—(1) all the men were not supplied with rammers of some other material than iron or steel; (2) the shaft required fencing; (3) the cages were not covered; (4) the engine was not furnished with an indicator; (5) the engine and machinery were not sufficiently fenced; (6) the report mentioned in General

Rule 23 had not been kept; (7) the register required by section 13 had not been kept; (8) there was no plan of the mine. Nos. 3 and 4 were not absolutely necessary, as men are not ordinarily raised and lowered in the shaft; but, on my revisiting the mine, on 19th August, considerable progress had been made towards completing the required alterations. One side of the shaft was well fenced, as was also the machinery. An indicator was fitted to the engine. General Rule 23 had been observed by the manager, and the men were all provided with wooden rammers. The ventilation is good.

*Fernhill Coal Mine, Green Island, Otago.*—At this mine a boy under thirteen was at work. His father explained that the boy usually attended school, but that during the holidays he occasionally came into the mine. This is no reason for breaking the Act. There was no plan, but one has since been made. The ventilation was very poor. Two shafts required fencing or covering in. The rope on the aerial tramway was considerably the worse for wear. General Rule 23 had not been observed. On revisiting the mine I found the shafts filled in and the ventilation improved.

*Freeman's Colliery, Green Island, Otago.*—The plan is not altogether up to date, but a portion of the mine has been recently surveyed. The ventilation requires guiding; the roof is bad in places. The register of boys (section 13) is not kept, nor is the weekly report (General Rule 23).

*Saddle-Hill Colliery, East Taieri, Otago.*—The old mine, mentioned in Mr. Cox's report (published in the report of the Mines Department for this year), has fired, and been abandoned. The new mine is situated nine chains to the dip. Only nine men, including the underground-manager, being employed below ground, it is not necessary to have a second outlet. The ventilation (natural) is good. The register of boys (section 13), and weekly report (General Rule 23) are not kept. A plan exists. Vertical ladders are fixed in the shaft in case of any accident to the winding-gear, but, as they are not "permanently used for the ascent or descent of persons in the mine," General Rule 16 is not broken. The shaft required fencing more securely, and something had been done towards this when I revisited the mine.

*Walton-Park Colliery, Green Island, Otago.*—The coal is now raised by means of the new shaft, which was not at the time of my first visit sufficiently fenced, but some days after the sliding-gate was made, and ready to be put up. A signal from the top to the bottom of the shaft was required; the register mentioned in section 13 had not been kept, and the plan was much behind-hand. With these exceptions, great care seems to be taken to comply with the requirements of the Act.

*Bruce Coal Company's Mine, Tokomairiro, Otago.*—Only one man is now employed here. More timber is required. No plan exists; and General Rule 23 has been disregarded.

*Laurence Coal Mine, Otago.*—The Act was here infringed in the following respects: The shaft required fencing; the cage was not covered; there was no means of signalling down the shaft; the engine had no indicator, and was, besides, very insecurely fixed; General Rule 23 had not been kept; and there was no plan. The timbering of the shaft is not at all secure; and any accident from the sides giving way would be serious, as there is only one outlet to this pit, in which, at the time of my visit, there was one man employed.

*Phoenix Coal Mine, near Balclutha, Otago.*—This colliery is situated close to the main line from Dunedin to Stirling, about two miles north of the latter place, and is worked by a tunnel in the upper part of an exceedingly thick seam. Three men are employed below ground. General Rules 2 and 23 are not observed, and there is no plan. I supplied the owners with a copy of the Act, as they had not previously received one, and also with a copy of Special Rules.

*Benhar Coal Mine, near Balclutha, Otago.*—This mine is situated close to the last-mentioned. Seven men are employed. No plan exists; iron rammers are used; the hauling engine requires fencing. General Rule 23 is not observed. The roof, which is exceedingly bad, requires to be more carefully timbered.

*Elliott Vale Coal Mine, Lovell's Flat, Otago.*—This mine is not at work at present.

*The Kaitangata Railway and Coal Company's Mine, Otago.*—The ventilation is good, the new workings being ventilated by the old tunnel, and a new shaft to the rise, as an upcast. This shaft is furnished with ladders to serve as a means of exit in case of accident, and there is a furnace at the top fed with fresh air. The old workings are separated from the new by wooden stoppings, in one of which a door is fixed, provided with a padlock, the key of which is kept by Mr. Samson, the manager. This portion of the mine is ventilated by the old furnace-shaft as a downcast, while the air ascends by a new shaft to the rise: no artificial means exists for maintaining the current of air, but at present it is good: whether the present means of ventilation for both parts of the mine will be sufficient when the hot weather comes is a question. Every morning the whole of the new workings are examined with a safety-lamp by a fireman, who makes a mark on the end of each working place, and also writes a report. Mr. Samson also examines them and makes a written report daily. Twice a week, at least, the old workings are thoroughly examined. From the report-book I see that, during July, gas was found fourteen times in the new workings and twice in the wastes, but always in very small quantities; in the former, always in one of the cross-drives to the rise; and in the latter, close to the place where it is supposed to have fired on the 21st of last February, and where I found it on March 10th. Although so little is given off, it has been necessary to put up some bratticing to keep the place clear, as, were it allowed to accumulate, there would doubtless soon be enough explosive mixture formed to cause a dangerous explosion, if brought in contact with a naked light. On the 29th and 30th of July, I examined the whole of the mine, and failed to find fire-damp in any portion of it. On the 14th of August I found a quantity of gas in the end of one of the cross-cuts and a very little in the other. The men were not at work that day, and a bolt-hole, which was nearly through between the two drives, would probably have cleared all gas out, had it been completed. The company are in possession of a large number of safety-lamps (which will require shields before they are safe in a current of air); but it is not necessary at present to make general use of them. A barometer, of which a daily register is made, is kept at the entrance to the mine. General Rule 2 (e) appears to have been broken in one case, and no register of boys, as required by section 13, had been kept; but Mr. Samson immediately remedied these defects. With the present system of management this mine need not be more dangerous than any other; but it must always be remembered that the safety of the workmen depends on constant care and watchfulness.

*Shore's No. 1 Kaitangata Coal Mine, Otago.*—Before each shift goes to work a fireman examines each place; but he does not make a mark, nor does he write a report: in future, however, in order to comply with Special Rule 30, he will be obliged to do both. The engine has no indicator; and General Rule 23 had not been observed. The top of the drawing shaft required fencing (this I found nearly completed on the 14th of August). There is no signal from the top of the shaft to the pit bottom. Two old shafts required fencing, and this has been done. There is still only one communication with the surface, but a pair of headings are being driven to the rise, in order to form a second outlet. Fire-damp is found in these rise headings, which are naturally difficult to ventilate. A furnace is in use, which, if properly attended to, will produce sufficient ventilation. A barometer is in the office at the pit-mouth. The Company have a good stock of safety-lamps; but naked lights are used in the workings. This colliery will require the greatest caution, as, in addition to the presence of gas, there is the danger of working with a single shaft.

*General Remarks.*—Although only the coal mines in the colony have as yet been brought strictly under "The Regulation of Mines Act, 1874," yet when fatal accidents occur in a gold mine it is necessary, under certain conditions, for an inspector to be present at the inquest; and on the 18th of August I attended an inquest on Thomas John Kitto, single man, aged 22, who was killed on the 16th of August, at the Great Extended Sluicing Company's mine, at Lawrence. The shaft is about 88 feet deep, and the deceased was engaged in the workings "blocking out." A shot had been fired, and the men were clearing up the dirt before setting timber. The roof was, according to the evidence, apparently sound, but there was a nearly vertical slip running diagonally across the place, and a piece of stone, having become detached from this slip, fell down and killed the unfortunate man almost instantaneously. I examined the scene of the accident two days afterwards—as I happened to be engaged in Otago at the time—and, although "The Regulation of Mines Act, 1874," was not observed about the mine in several respects, yet everything seemed in excellent order, and, as far as I could learn from my personal inspection and examining witnesses, there appeared not to have been the slightest negligence. The verdict was "Accidental Death."

In the coal mines in the South Island no fatal accidents have occurred since the date of my last report, but the following casualties, not resulting in loss of life:—(1.) On the 13th of August, at the Westport Colliery Company's Fisher Mine, a trucker was injured by being struck with a hook at the end of the jig-chain. It appears, from the report forwarded by the manager, that the injured man was exceeding his duty in lowering a set on one of the inclines, and that he was careless enough to send away the full tubs without seeing that the empty ones were attached to the end of the chain. They were not, and consequently the descending set overpowered the brake, and the end of the chain was swung round, hitting the man on the fleshy part of the leg, and inflicting the injuries mentioned, which were, however, not considered to be serious. (2.) On the 14th of August, at the Coal-Pit Heath Company's Mine, Greymouth, a man named John Parkin was injured by a fall of coal. It appears from the report sent to me by the manager that, on the evening preceding the occurrence, a shot was fired at the end of the main heading without bringing down the coal. Next morning Parkin proceeded to go on with the holing, underneath the block of coal, while his mate drilled a hole in the upper portion with a view to putting in a second shot. It is no wonder that, under these circumstances, the coal fell upon the former, and crushed him severely. If Special Rule 19—"In addition to the examination by the underviewer or other officer, each work-person must examine his working-place before commencing work"—had been observed, this would not have happened. (3.) On the 3rd of September an accident occurred at the Benhar Coal Mine, near Balclutha. From the report sent to me by the manager, it appeared that in firing a shot a fuse had been used which was too short to allow of all the men getting out of danger, consequently a piece of coal struck one of them with sufficient force to break his leg.

I have been unable personally to verify any of the accounts given above, either by examination of the place, or by questioning any of the persons concerned; and, although all the above-mentioned non-fatal accidents were apparently of the simplest nature, and the accounts sent were, I have no doubt, perfectly accurate and impartial, still it is not to be expected in any other case where the accident might have been caused by carelessness or violation of the Act, that the manager should criminate himself in sending the report. In New South Wales, the examiner or inspector appears to be obliged to make a special inspection and report on every serious accident; and in Victoria, "the portion of the mine where the accident occurred may not be interfered with until inspected by the inspector or coroner's jury, unless with a view of saving life or preventing further injury."—"The Regulation of Mines Statute, 1877.") This latter course, though not compulsory in other mining countries, is almost always followed. In New Zealand, the long distances between mining centres render it impossible, at present, for the inspector to be on the spot within a reasonable time after the occurrence of an accident, and thus this most important duty—the examination of the scene before the circumstances have altered, or been altered, sufficiently to prevent his forming an independent opinion—cannot, in the present state of the colony, be efficiently performed.

Of course it cannot be expected that an Act which was brought into operation entirely without warning, and which has been in force for little more than six months, should be, what one may call, generally observed. The above report therefore shows merely the condition of the mines at the date of my last visit, and many managers had delayed commencing to put the Act in force until an opportunity presented itself of talking the matter over with an Inspector, and of seeing the interpretation put upon certain portions of it by the Government; and by others certain portions had been misread or misunderstood; others, again, asked, "Is the Act really in force?" But some, I am glad to say, had done all in their power to perform what was required of them, and had shown by their actions that they appreciated and understood a law having for its object the preservation of life. Still, what has been done will doubtless be instrumental in preventing accidents; but I sincerely hope that before long the subject will receive the attention which it deserves, and that an Act dealing solely with coal mines will be passed: an Act which can be enforced, and not one like the present one, of which portions are unworkable, and which cannot be said to be applicable to coal mining. The "Provisions specially affecting coal mines" are, of course, a dead-letter, as few of the mines weigh the coal, and none employ a check-weighman; and the limit of time for providing a second outlet will not expire for a considerable period. Other portions urgently require amendment.

One of the most important portions of the Act will not be in force until the special rules are in thorough working order at all coal mines: this was the case at only one mine amongst those mentioned in this report, and in this instance the men had been charged 1s. each for the copies. Apart from the question of the owners making 400 per cent. profit upon rules which the Government have taken so much trouble to have established as cheaply as possible, I do not consider the action legal, and have informed some of the owners, and the manager, as also the men who complained, of my opinion.

I have endeavoured, throughout the whole of the collieries which I have visited in New Zealand—and this includes all of any importance—to impress upon the owners and managers the advisability of observing “The Regulation of Mines Act, 1874,” not only for the safety of those employed by them, but also in their own interest; and I hope that the average death-rate, which is probably the highest that has ever been recorded in any country, may in future be as low as is possible in such an occupation as mining.\* Already, for the present year, one death has occurred for less than fifteen men employed (above and below ground), while in Great Britain the corresponding rate for 1877 was 1 in 409.

As remarked in my last report, I have in almost every case met with encouragement and assistance from owners and managers in carrying out my duties, and a general disposition has been manifested to comply with the Act of Parliament, so that it has been unnecessary to employ compulsory methods. Should, however, the present system not prove effectual, I shall be obliged to make use of the less pleasant means put into my hands by the law.

I have, &c.,

GEORGE J. BINNS,  
Inspector of Mines.

The Under-Secretary for Mines, Wellington.

### No. 5.

#### ANNUAL REPORT UPON INSPECTION OF COAL MINES, SOUTH ISLAND.

Mr. Inspector BINNS to the UNDER-SECRETARY FOR MINES.

SIR,—

Wellington, 12th June, 1880.

In accordance with your instructions, dated 30th January, 1880, I have the honor to make the following report on the condition of the coal mines in the South Island. To facilitate reference, the numbers in the report are the same as those in the accompanying statistical table.

1. *Wallsend Colliery, Collingwood*, has been worked very little during the past year, and has not been visited. Mr. Marshall has sent me the output and number of men.

2. *Westport Colliery Company's Fisher Mine* has also done very little, and when last visited the underground works were at a standstill. The Act, however, is observed. The number of men (27) is an average of the number employed about the mine during the past year. Mr. Denniston informed me by letter, dated 14th May, that about 60 tons of coal had been sent down the incline. The rest is mostly stacked, either in or outside the mine.

3. *Wellington Coal Company's Waimangaroa Mine* is practically at a standstill, only one man being employed, in addition to the manager and overman. General Rules were not hung up or distributed; no daily record of the barometer is made; and no chalk-mark is made in the morning, although the mine is examined before the workman enters. [Since writing the above, I have seen Mr. Ferguson, who informs me that General Rules have been promulgated as required.]

4. *Energetic Coal Mine, Reefton*, has not been inspected before the date given in the table. The air and timber are good. Very little coal is sold.

5. *Golden Treasure Coal Mine, Reefton*, is worked solely for the purpose of supplying the quartz-crushing machine. The same two men that are employed at the Energetic have also the contract for working this mine. Another drive has been commenced a few yards to the northward; but has been temporarily abandoned, owing to a dispute as to the lease. A large amount of coal has been taken from this ground—many times the total output given.

6. *Lankey's Gully Coal Mine, Crushington*, is driven far too wide for safety; but timber is unsparingly used.

7. *Queline's Coal Mine, Reefton*, has not yet commenced work, the old mine having been abandoned owing to an underground fire, caused, possibly, by spontaneous combustion, or, more probably, by a light carelessly left in the mine.

8. *Newcastle Coal Mine, Reefton*, is well worked and ventilated. The 300 tons given as output for last year is not absolutely the correct quantity, but will probably represent the amount, as it is for eleven months from July, 1879, at which date Mr. Breen commenced to work.

9. *Dudley Coal Mine, Reefton*.—A new drive has been put in, and has met with a fault. The 186 tons given as total output is a very small fraction of what has been raised from the ground; but in this, as in very many other cases, it is utterly impossible to arrive at even an approximation to the whole amount, owing to the frequent changes of ownership which are, unfortunately, customary.

10. *Golden Fleece Extended Coal Mine* is practically abandoned, a little coal being taken from the pillars. A new mine will shortly be commenced.

11 and 12. *Dugan's Coal Mine* and *Burke's Coal Mine* are both worked by two men, the coal being packed on horses down a very bad road.

13 and 14. *Union Company's and Graham and Company's Coal Mines* are both worked exclusively for the supply of the boilers, and have not been visited.

The Reefton coal mines (Nos. 4 to 14 inclusive) have, with the exception of the two last, been visited and put in the way of observing the Act, which was of course unknown before. They are, as may be seen on reference to the statistical table, of very small size as regards output and number of men, still the coal is of excellent quality, and their local value cannot be overrated. So far as I could find out, explosive gas has not been found in any of them, but if the workings become larger it is not unlikely to be present. The system of working, which is noted as “bord and pillar,” by no means as a rule deserves the name, most of the mines being worked on any or no principle, the main

\* This average includes the accident at Kaitangata, which occurred before the Act was brought into force.—O.W.

object apparently being to get some coal as cheaply as possible, let the roof fall in, and start again somewhere else. In after years the ill-effects of this will be greatly felt. I referred to the same subject in my report of July last (page 19, line 23).

15. *Brunner Coal Mine*.—On the 21st of April the General Rules were neither hung up nor distributed. This was remedied as regards the former particular on the 22nd. All abandoned places were not fenced; no register was kept of the one boy under nineteen; the fireman's report was not signed, and was too short; he also appears not to have invariably examined the whole of the travelling roads. No barometer or thermometer was on the premises. Considering the fatal explosion which occurred a few weeks before my visit, it seems strange that the Act should have been disregarded on so many points; but the manager (Mr. R. Elliott) was seriously injured by the explosion, and was no doubt unable to give as much attention to the subject as it required. He was relieved only just after my last visit by Mr. Jonathan Harrison, F.G.S., who has informed me by letter, dated 29th May, that the coal beyond the fault has been at length reached. This is a matter for the greatest congratulation. The powder magazine mentioned in my report of July, 1879, has been removed from the workings. The ventilation is still dependent on natural causes, but, as it has always (so far as I can ascertain) been very good, and as gas has never been seen in the present workings for many years, I consider it sufficient at present. A 15-foot Guibal fan was erected to ventilate the workings in the fault, but was destroyed by the explosion on the 3rd March, 1880. The output given does not include a large amount of slack which is wasted. If there were a demand this would be of considerable value, being excellent fuel, and well adapted for the manufacture of first-class coke.

16. *Coal Pit Heath Colliery* is rather fiery just now. At the time of my visit, men with naked lights were working close to an accumulation of gas in the roof of the main level. This is a breach of General Rule 1, so I required Mr. Alexander to remove the gas, or work that place and one or two others of a somewhat similar character with safety-lamps; he adopted the former course. At least, in a letter dated 13th May, he informed me that the stoppings through which there had previously been some leakage had been replaced, and that the gas had in consequence disappeared; also that the foundations of a new furnace were being got out. There was certainly plenty of air when I tested it, if properly distributed, the amount being 3,127 cubic feet per minute for twenty-six men, or 20 per cent. more than the New South Wales standard, which is similar to that required in some of the districts of the United States. The ropes are not tested in the morning before the first man descends, as required by Special Rule 47. With these exceptions, Mr. Alexander seems to take the greatest pains to observe the Act, which affects this mine as much as any one in the colony, with one exception.

17. *Wallsend Colliery, Greymouth*.—Work has not yet been recommenced, and pumping operations have been suspended. There is, I am glad to say, some prospect of this colliery, which ought to be one of the best in the colony, being again in a position to put out coal.

18. *Springfield Colliery, Malvern*.—When this colliery was last visited, the Act was broken in the following particulars: (1.) Young persons under sixteen were not registered, and were working underground more than forty-four hours per week. (2.) Hardly any of the men had Special Rules, and none General. (3.) In one place, which two workmen had to pass very frequently, five consecutive bars were broken. Considering what a bad roof this seam has—one of the worst, if not the worst that I have ever seen—this was very dangerous, and, at my request, Mr. Bridgett, the overman, withdrew the men from the mine. This place had been reported as "safe" by the fireman, who acknowledged, when questioned, that it was anything but secure at the time of his examination, thus showing the utter unreliability of his report. Printed forms are used here for the reports, as in some parts of the Old Country, having a blank space to be filled in "safe" at the top, and "ditto" all the way down, if the various portions of the mine are really so. This style of report-book is, in my opinion, not only an incentive to idleness, but conducive to a stereotyped and perfunctory method of performing a most important duty. (4.) There was practically no ventilation in the top-level workings, a ventilating-door on this level is frequently open owing to the passing sets, besides which there should be two doors (Special Rule 8). The furnace also is neglected. (5.) The man-holes in the engine-plane were insufficient in number, and those existing were not clear of obstruction, as provided by General Rule 5. (6.) The plan was not up to date. After having usually found the Act better observed here than at almost any other colliery, it is disheartening to find such a condition of things as is described above. Fire-damp is said to have been found in the workings, but, although this is by no means unlikely, I have not seen it. A shaft is being sunk to the dip, which will not only in all probability open out a large amount of coal, but will improve the ventilation and general condition of the workings. I am informed by Mr. Oliver Evans, Secretary to this Company, that the output of coal at the beginning of May was about 290 tons per week. The larger of the shafts mentioned in the table is the one which is being sunk to the dip. The coal is expected to be reached at about 200 feet.

19 and 20. *Kowai Pass Colliery and Eureka Coal Mine* are both small mines, situated close to Springfield. The latter is little more than a prospecting-shaft, having no workings opened out. I put them both in the way of observing the Act.

21. *Canterbury Colliery, Sheffield*, is nearly at a standstill.

22. *Homebush Coal Mine*.—No register kept of the one young person employed above ground. General Rules not hung up or distributed. Act and Rules otherwise observed. The mine is in very good order, and shows a great improvement on its condition as described in former reports. As predicted in my report dated 12th September, 1879, gas has been found in the workings; but in very minute quantities.

23. *Wallsend Colliery, Malvern*.—Operations suspended.

24. *Rockwood Coal Mine*.—Only prospecting-shafts and drives.

25. *Mount Somers Coal Mine* is an open-work quarry. Although the Act appears to apply to these mines, I fail to see how it affects them under ordinary circumstances. The total output is compiled from information kindly supplied by Mr. C. P. Cox.

26. *Wharekuri Coal Mine*.—Not visited. Only one man employed. I am indebted to Mr. Cairns for the information given in the Statistical Table.

27 and 28. *Prince Alfred (Nos. 1 and 2)*.—These are now connected underground. A good plan



has been made. No weekly report. General Rules neither hung up nor distributed; Special Rules, except in two cases, both.

29. *St. Andrew's Coal Mine*.—This is not the same mine mentioned in last year's report; but the total output from that mine has been added, as it is the same lease. A good plan exists, and the Act is observed.

30. *Ngapara Colliery*.—Introduced Act.

31. *Shag Point Coal Mine*.—Boys are employed overtime, and no register is kept. Men ride on the set in the engine-plane, which is a dangerous practice. One man has been hurt by it. Mr. Williams did not report this accident. There was, when I was at the mine, no plan of the workings, but one has since been sent to me by Mr. Hutcheson, C.E., who did the survey. A door was propped open whilst on its hinges, contrary to special rule. The ventilation was poor, though a communication had been made with the old workings. The roof, as mentioned in a former report (September last), is bad, and also insufficiently supported, as I had occasion to point out. A few weeks after my visit, a man was hurt by a fall of roof. This was, I believe, reported to you, in default of an inspector of the district. Mr. Williams informs me that the present output is 1,100 to 1,200 tons per week.

32. *Elliott's Coal Mine, Palmerston, Otago*.—Merely a prospecting drive.

33. *Hill's Creek*.—No information.

34. *Hyde Coal Mine*.—Has not been visited. Messrs. McAuley and Main have kindly informed me that this mine has been worked only during the past summer, and that no account of the output has been kept.

35. *St. Bathans Coal Mine*.—This mine is worked opencast, and employs only one man. I am indebted to Messrs. Rolland Brothers for the information given.

36. *Kyeburn Coal Mine*.—Messrs. McCready and Combes have been good enough to forward the statistics of this mine.

37. *Welshman's Gully Coal Mine*.—Mr. Owens, the proprietor, sent me the particulars of this mine. He also stated the output as "500 loads," which I have put down as tons, though it will probably be more.

38. *Alexandra Coal Mine*.—Both shafts require fencing. Vertical ladders are used. The air is good, and the mine is in good order.

39. *Manuherikia Coal Mine*.—There is only one man working underground—a Chinaman, who does not know how to read English. Though there is only one outlet, the workings are well ventilated, like the hold of a ship, by a windsail. The total output given is only from this shaft. The old mine, which was worked by a drive, was abandoned during the floods.

40. *Cromwell Coal Mine* is in very bad order; but, being little else than a prospecting drive, much is not to be expected. The old shaft, with good engines, &c., was destroyed by the floods. The shaft mentioned in the table is only just commenced, to the dip. Since writing the above, Mr. Muter has informed me (June 4th) that the mine is no longer worked.

41. *Bannockburn Coal Mine* is an old mine, worked by a drive. The coal is becoming worked out.

42. *Kawarau Coal Mine, Cromwell*.—The coal here stands nearly on edge, and is, therefore, more difficult to work and ventilate. The air requires guiding.

43. *Bannockburn Coal Mine* was formerly worked by Mr. Lawrence, but is now abandoned.

44. *Clyde Coal Mine* is worked on no system; and the owner, manager, workman and carter, who works alone, will probably some day be hurt or killed, and nobody will know of it for days. On my representing that the pit was worked in a dangerous and unsystematic manner, Mr. Marie replied as follows:—"With regard to the last part of your communication with respect to the working of the pit, I ought to know whether it is dangerously worked or not, having to do the whole of the pit-work myself; and that, if any accident arises through my neglect, no one will be the sufferer but myself." There appears to be some force in this argument; still, an individual who has shown so much perseverance as Mr. Marie can ill be spared, and suicide is inadmissible. However, if a man chooses to take the risk, no amount of interference—unless an Inspector shared his solitude, and were constantly down the pit—could prevent his working the mine in his own way. A curious fact in connection with this is, that Mr. Marie carries the coals in bags on his back, up a considerable incline, out of the mine, not caring even to adopt the wheelbarrow, which is popular in this district.

45. *Earnslough Colliery, Clyde*.—At this colliery I found two boys, who informed me that their ages were respectively thirteen and fifteen, that they got the coal while their father carted it, and that they were sometimes ten hours in the mine in the course of one day. The entrance to the mine is by a dip drive—in one place only 23½ inches in height. The roof is exceedingly bad. The place where the boys usually worked was past an old road to the rise; on exploring this road, and surmounting a small pig-back, my candle was at once extinguished by an accumulation of carbonic acid gas. This gas was within twenty yards of the travelling-road, and might at any moment have increased in volume sufficiently to pour over the brow of the hill and down to the travelling-road, so as to cut off the boys' retreat. The younger child said he frequently had headache, owing to the bad air. The owner and manager of the mine, who was also the father of the boys, appeared to be—I must in justice to him, say—in total ignorance of the imminent danger existing. Still, such young boys ought on no account to be allowed to work alone in the safest mine, much less in one where there was so much danger as in this. The mine was never examined before the boys went in, although the father did appear to go in occasionally. I at once gave notice under section 19, and Mr. Holden (who said the younger of the two was fourteen years of age) replied, as follows: "I hereby agree to remedy the said danger, by stopping the employment of the boys mentioned in the mine, except under the supervision of myself or some other responsible person of mature age."

46. *Clyde Coal Pit*.—This mine, which was worked by a shaft, was closed by the floods. The total output given is by no means exact, Mr. Holt not having, he informs me, kept an accurate account.

47. *Gibbstown*.—Mr. Dooley informs me that the exact amount is not known to him, but that the annual output is about a thousand tons.

48 to 50. *McPherson's, Crawson's, Low and Robertson's*.—All open-work lignite mines, at Roxburgh. Crawson's can hardly be called a sale-pit, having raised only some five or six hundred tons in ten years, and of course nobody is regularly employed.

51. *Fern Hill Colliery, Green Island.*—The Act is observed, except as to the distribution of General Rules. The rope which I reported on 12th September, 1879, as being in bad repair, has since broken; fortunately nobody was hurt, and but little damage done. The workings of this mine are in some danger from a water-race which runs round the V of the hill, just above the entrance. I requested Mr. Shaw to exercise the greatest care in allowing men in the dip-workings when the full volume of water was first turned on. He assured me of his intention to exercise every precaution.

52. *Green Island Colliery.*—Here a boy was employed underground, beyond the time allowed; the engineman also works too long. Special rules not distributed in every case, and General Rules not at all. The ventilation of the dook was poor; a slit was commenced for the purpose of improving it, but unfortunately thirled into an old water-lodge, and had to be recommenced. The old workings have been pervaded to a considerable extent by a creep. A plan is kept. Engine and shaft well fenced.

53. *Saddle Hill Colliery.*—General Rules not promulgated. Only one outlet. Ventilation good. Plan kept.

54. *Walton Park Colliery.*—The weekly report had been allowed to get rather behind-hand, as the pit worked irregularly. A boy under nine years of age was in the mine, but without the manager's knowledge, and he was not at work. The ventilation is good, and the above-ground requirements of the Act carefully attended to. Of the 16,000 tons raised in 1879, 2,000 tons dross was used for the brick-yard in connection with the colliery, and for other purposes.

55. *Abbotsroyst Colliery.*—Ventilation much requires guiding. Plan made up regularly. General Rules not promulgated. Nine hundred and twenty tons of the output for 1879 consisted of dross.

56. *Lawrence Coal Mine.*—The old shaft is, I am glad to say, abandoned. A new working has been opened near where the coal was formerly worked. Twenty-five pounds of powder was stored in the mine. The owner has Special but not General Rules.

57. *Frying-pan Coal Mine.*—A prospecting shaft.

58. *Johnston Coal Mine.*—Standing.

59. *Bruce Coal Mine.*—When visited, this mine was worked by Mr. Hardwick; but it has since passed into Mr. Millar's hands.

60. *Real Mackay Coal Mine.*—Mr. Wilson, the manager of this mine, though previously warned, has done absolutely nothing to observe the Act. The main drive has fallen in, as predicted in Mr. Cox's report of last year.

61. *Elliott Vale Coal Mine.*—Nothing done to observe Act. Only one man working.

62. *Hurdstone Coal Mine.*—A new mine, only about thirty yards driven.

63 and 64. *Cannon's and Bryce's.*—Openwork.

65. *Benhar Coal Mine.*—A good plan is kept, and regularly made up. Special, but not General Rules, promulgated. I found a keg of powder, containing about 10 pounds, so cautioned the owner, and had it removed. Mr. Nelson has worked this mine for about five years, during which time he has raised the 12,000 tons given in the statistical table. The output for 1879 is compiled from information given by the owner, and may not be absolutely correct.

66. *Phoenix Colliery.*—I was unable to get the output, as the former owners had left the district.

67. *Kaitangata Railway and Coal Company's Mine.*—An explosion of gas occurred in this mine on 18th December last, one boy being slightly burned. Perhaps on account of the trifling character of the injuries, the accident was not reported. In Great Britain, if a person is at all injured by an explosion, it is necessary to report it. The gas came from a very small blower in the main intake. Naked lights are used in the mine except in, or in close proximity to, places where gas has been seen within the previous week. On my recommendation Mr. Samson agreed to use lamps in such places.

68. *Shore's No. 1 Kaitangata Colliery.*—The air at this mine requires more guiding, and I found that a man had been tampering with the brattice, which is a very serious offence, particularly in a fiery mine. General Rules hung up but not distributed. The workings are examined before the men go in. Mr. Shore is driving a pair of heads to the rise, in order to make a second communication with the surface. The seam rises in one place at an angle of  $49\frac{1}{2}^{\circ}$ , which makes it not only difficult to ventilate but bad to work.

69 to 75. All openwork and employing no men regularly. Mr. McKinnon (74) informs me that prior to 1879 his mine was not worked for sale. Mr. J. McQueen informs me that No. 73 is used only for supplying a shepherd's hut. The two seams noted as being worked at Scott's mine are separated by about 12 inches of carbonaceous shale.

76 to 79. These mines have not been visited. \* As may be seen by those outputs that are given, they are all on a very small scale.

80 to 82. All openwork lignite mines.

83. *Nightcaps Coal Mine.*—Wrey's Bush. Introduced Act. Operations only recently commenced.

84. *Preservation Inlet Coal Mine.*—Regular work has not yet commenced, and the mine has not been visited.

*Note.*—I have always pointed out to owners or managers the points which required their attention in order to keep the Act.

I have, &c.,

GEORGE J. BINNS,

Inspector for Mines.

The Under Secretary for Mines, Wellington.

## No. 6.

### CORRESPONDENCE UPON SHAG POINT COAL MINE.

The UNDER-SECRETARY for MINES to Mr. Inspector BINNS.

(Telegram.)

Wellington, 23rd June, 1880.

URGENT.—To G. J. Binns, Esq., Inspector of Mines, Dunedin.—Is there any truth in report that last week four or five men employed in Shag Point Coal Mine had to be carried to surface, in consequence of defective ventilation? If so, what steps have you taken or do you propose to take? If you have information reply urgent, at once; if not, report on matter soon as possible, of course taking any necessary steps meanwhile.—OLIVER WAKEFIELD, Under-Secretary for Mines.



Mr. Inspector BINNS to UNDER-SECRETARY for MINES.

(Telegram.)

Dunedin, 23rd June, 1880.

URGENT.—O. Wakefield, Esq., Under-Secretary for Mines, Wellington.—I have no further information *re* Shag Point Colliery than that in my last report. I had heard since my arrival here of bad ventilation there. Will investigate when relieved from Fernhill case.—G. J. BINNS, Inspector of Mines.

UNDER-SECRETARY for MINES to Mr. Inspector BINNS.

(Telegram.)

Wellington, 30th June, 1880.

To Mr. INSPECTOR BINNS, Dunedin.—As soon as you have completed investigation of reports as to Shag Point Mine, and thoroughly inspected it, report whether ventilation and condition of mine satisfactory.—OLIVER WAKEFIELD, U.S. Mines.

*Report on Shag Point Coal Mine.*

Mr. Inspector BINNS to the UNDER-SECRETARY for MINES.

SIR,—

Dunedin, 5th July, 1880.

I have the honor to make the following report on the Shag Point Mine, and to transmit a copy of my last letter to Mr. Williams:—

The mine is ventilated by a furnace which is large enough in itself, but is placed on the surface, and fed with fresh air, so that the ventilating column is only 30 feet in height, and the intake from the outside atmosphere must be more than enough for the contracted orifice of the chimney, which measures only 2 feet 6 inches by 2 feet 6 inches. The airways in the mine are much contracted, and a steam pump is situated in the main intake in addition to the feed pipe, which is by no means well connected, and is also insufficiently covered to prevent the radiation of heat. Thus every principle of ventilation is disregarded, and the men are not supplied with cool and wholesome air. In addition to this, the quantity of air on the 2nd instant in the main return airway was only 3,600 cubic feet per minute, about half enough for the ordinary number of men employed. The ventilation is to a certain extent dependent on a large screw on the surface to the east of the intake, thus bringing the atmospheric current into requisition.

There are at present only about 10 men in the mine, the others being on strike for an increase in wages.

On the 2nd instant, I had an interview with Messrs. Strobe, Williams, and Rowley, directors of the Shag Point Colliery Company, who expressed a unanimous wish to do anything required for the purpose of remedying the defective ventilation, and putting the mine in order. From the accompanying copy of my letter you will see what my recommendations are; and these will be carried out as quickly as possible. You will readily understand, however, that it must be some time before the new shaft can be made available. For the present, I think the temporary expedients will result in considerable improvement.

With reference to this subject I may, perhaps, point out that, with a resident Inspector such a state of things could not have occurred, and that, at all events, it shall not be repeated after I have taken charge of my district. Mr. Williams complains that the number of men employed was the result of an effort to oblige the Government railway authorities, who wished for a larger supply of coal very suddenly. Still, this does not explain the fact of there not being sufficient air for 35 men, without gob-fire.

I have, &c.,

The Under-Secretary for Mines,  
Wellington.

GEORGE J. BINNS,  
Inspector of Mines.

*Postscript to Report on Shag Point Mine.*—Another great drawback to the ventilation is the existence of a gob-fire in the old workings: and this is the cause of the illness of the men, which gave rise to the recent reports about men being carried out. These fires are about the most difficult things to deal with, and are less understood than any phenomenon connected with mining. One has existed in the Shag Point Mine for many years, and, as mentioned in former reports, an effort has been made to put it out by pumping in the sea. As predicted, this attempt has failed. Unfortunately, this fire has been allowed to communicate with the present workings, and the "stink" has come off to such an extent as to incapacitate some of the men from work. It produces nausea, violent head-ache (as I can testify from experience in England, as also on the 25th ultimo), vomiting, and total prostration. On my last visit it seemed to be more effectually shut off. There is no danger of explosion. The only ascertained way to cure these fires is by application of carbonic acid gas, manufactured either by the fire itself, or by the ordinary method, and pumped in. If this fire is not effectually shut off, it will be a never-ending cause of trouble and annoyance.—GEORGE J. BINNS.

*Additional Report on Shag Point Coal Mine.*

Mr. Inspector BINNS to the UNDER-SECRETARY for MINES.

SIR—

Wellington, 15th July, 1880.

With reference to my report, dated the 5th instant, on the Shag Point Coal Mine, I have the honor to inform you that I fell into an error with regard to the relative positions of the furnace and the upcast shaft. The air from the mine (as explained to me in a letter from Mr. Williams, dated 9th July, 1880) passes over the furnace, and not as stated in my report. On the occasion of my visit to the furnace, I was accompanied by the Colliery bookkeeper—both the manager and interviewer being engaged at the Resident Magistrate's Court; and, as the fact is not readily apparent from the outside, and I was in great haste, owing to short leave of absence from the Compensation Court, Dunedin, I made a mistake, which, in justice to Mr. Williams, I hasten to acknowledge. This does not, however affect the fact that the ventilation was defective.

I have, &c.,

The Under-Secretary for Mines,  
Wellington.

GEORGE J. BINNS,  
Inspector of Mines.

## RETURN No. 1.

## STATISTICS OF WORKINGS IN COAL MINES.

Number.	Name of Mine and Locality.	Name of Manager.	Number of Years Working.	Quality of Coal.	Number of Beams Worked.	Thickness of Beams.	Thickness Worked.	Dip of Seam.	System of Underground Working.	Number of Shafts.	Dimensions of Shafts.	Output Delivered by	Output for 1879.	Approximate Total Output to 31st December, 1879.	Number of Men ordinarily employed.	Power used for Draining Mineral.	Stroke of Pumps.	Size of Barrel.	Height of Column.	Ventilating Power.	Date of Inspector's last Visit.
<b>AUCKLAND.</b>																					
1	Kawakawa, Bay of Islands	Moody, T. P.	15	glance	1	6 to 15	6 to 14	1 in 6	pillar and stall	2	7' x 10' and 3' diameter 4' x 5'	engine-plane tunnel	42,383	341,383	130	engine	6	12,9' & 6'	150	steam-jet	Feb., 1880
2	Kamo, Whangarei	Kerr, George	3	brown	1	8 to 12	all	1 in 6 NE	bord and pillar	1			3,771	7,771	25	hand	...	...	...	natural	"
3	Whau Whau, Whangarei	Love, Alexander	15	"	1	9	"	1 in 12 NE	stoop and room	...	...	"	200	15,200	3	horse	...	...	...	"	"
4	Taupiri, Huntley	Collins, W.	4	"	2	6 to 14	nearly all	irregular	bord and pillar	1	...	"	14,486	38,486	29	hand	...	...	...	"	April, 1880
5	Waikato, "	McGlynn, A.	3	"	1	18	11	"	"	...	10' x 4½' x 7'0' and 6' x 4'	shaft	12,670	18,146	17	"	1½	6"	70	"	"
6	Miranda, "	Footo, G.	3	"	1	55	16	1 in 72	"	2			1,560	4,235	6	engine	...	...	...	"	"
<b>NELSON.</b>																					
1	Wallsend, Collingwood	Marshall, John	12	bitum.	...	27 to 32	all	W, 12½°	longwall	...	...	drive	140	6,090	8	hand	...	...	...	water-jet	...
2	West Wanganui	...	...	...	1	4	all	W, 7°	bord and pillar	...	...	drive	2,600	650	...	hand and self-acting inclines	...	...	...	natural current	7/4/80
3	Westport Company's, Westport	Denniston, R. B.	1½	bitum.	...	...	...	varies	"	1	...	"	1,260	3,523	2	horse	...	...	...	"	6/4/80
4	Wellington Company's, mangaroa, Westport	Ferguson, A., M.E.	4	"	1	18 to 24	6	SW, 22½°	"	...	...	"	1,222	...	2	hand	...	...	...	"	14/4/80
5	Energetic, Reefton	McAllum, James	5	pitch	1	10' 2"	all	S, 30° E	"	...	...	"	114	298	...	"	...	...	...	"	"
6	Golden Treasure, Reefton	Harris, John	...	"	1	6	"	W, 8°	"	...	...	"	276	550	2 u.	"	...	...	...	"	16/4/80
7	Lankey's Gully, "	Irving, Walter	...	"	1	11	"	NE, slight	"	...	...	"	...	...	1 o.	"	...	...	...	"	"
8	Gulline's, "	Gulline, R. E.	4	"	1	6	6	SW, 32°	bord and pillar	1	...	drive	300	...	2 o.	windlass	...	...	...	"	17/4/80
9	Newcastle, "	Breen, Arthur	5	"	1	9	...	N, 40°, W, 20°	"	...	...	"	20	186	1 o.	hand	...	...	...	"	20/4/80
10	Dudley, "	Joice, George	6	"	1	...	...	W, 11"	"	...	...	"	...	...	2	"	...	...	...	"	17/4/80
11	Golden Fleece, "	Trennery, John	9	"	1	15 to 16	all	W, 1 in 3	"	...	...	"	...	400	1	"	...	...	...	"	19/4/80
12	Dugan's, "	Dugan, Hugh	...	"	2	1' 11"	"	N, 30°	"	...	...	"	say 200	200	2	"	...	...	...	"	15/4/80
13	Burke's, "	"	...	"	1	10	6	SW, 1 in 3	"	...	...	"	say 100	...	...	"	...	...	...	"	"
14	Graham and Co.'s, Reefton	"	...	"	...	...	...	SW, 1 in 4	"	...	...	"	...	...	...	"	...	...	...	"	"
15	Brunner, Greymouth...	Harrison, J., M.E.F.G.S.	15	bitum.	1	12 to 16	all	SW, 1 in 4	bord and pillar	...	10' x 6' x 280' 6' diam.	drive	26,724	118,129	44 u.	hand & self-acting inclines	...	...	...	natural current	24/4/80
16	Coal Pit Heath, Greymouth	Alexander, Thomas	3	"	1	16	"	SW, 1 in 4	"	2		shaft	13,833	27,713	26 u.	engine 30 h. p.	4'	10"	250'	furnace	23/4/80

	WESTLAND.	Brown, Thomas ...	3	"	1	16	"	SW, 1 in 3½		1	11 diam. x 670'		none	12,122	1 o.	engine 48 h. p.	5'	10"	670'	fan 15'	June, 1879
17	Wallsend, Greymouth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
CANTERBURY.																					
18	Springfield, Malvern	...	3½	brown	1	3' 9" to 4' 6"	"	SE, 1 in 6 to 1 in 12	...	2	6' x 6', 5' 2" x 12' x 2' 6"	engine plane drive	4,589	10,334	31 u.	engine 10 h. p.	10"	3"	...	furnace	28/4/80
19	Kowai Pass, "	...	1	"	3	1' 7", 9" 1' 6"	"	E, 1 in 4	bord and pillar	1	5' x 2' 6"	shaft drive	125	125	3	"	...	...	...	natural current	29/4/80
20	Eureka, "	...	½	"	1	...	"	SE, 1 in 6	"	1	4' x 4' x 14'	shaft drive	30	30	2	"	...	...	...	"	21/12/79
21	Canterbury, "	...	17	"	2	2	"	SE, 1 in 3	long wall	1	3' x 4'	drive	150	15,980	3	horse	...	...	...	"	30/4/80
22	Honebush, "	...	8	"	2	3 and 7	"	E 10° S, 1 in 3	bord and pillar	2	3' 6" x 3' x 60'	"	4,275	12,039	15 u.	"	...	...	...	"	...
23	Wallsend, "	...	3	...	2	3 and 6	"	E 10° S, 1 in 3	"	2	3' 6" x 3' x 20'	shaft drive	none	3,478	none	engine 8 h. p.	12"	5"	91'	"	...
24	Rockwood, Mount Pleasant	...	1	altered brown	1	2½	"	N 20°, W 80°	...	1	3' x 3'	drive	...	...	"	hand	...	...	...	"	25/1/80
25	Mount Somers, Mount Somers	...	15	brown	1	25	20	S 8°	openwork	...	...	...	250	3,000	2	...	...	...	...	"	27/12/79
OTAGO.																					
26	Wharekuri, Wharekuri	...	...	...	...	...	...	...	...	...	...	...	400	5,000	1	hand	...	...	...	...	...
27	Prince Alfred No. 1, Oamaru	...	...	brown	2	9	all	E 10° S, 1 in 5	bord and pillar	...	...	drive	960	...	3	"	...	...	...	natural current	7/2/80
28	Prince Alfred No. 2, "	...	3	"	2	9	"	E 10° S, 1 in 5	...	1	4' x 4'	"	2,430	6,925	4 u.	"	...	...	...	"	"
29	St. Andrews, Oamaru	...	1	"	1	6½	"	E 13° N, 5°	"	1	4' diam. x 26'	drive	12	4,912	2	"	...	...	...	"	10/2/80
30	Ngapara, Ngapara	...	1½	brown	1	12	10	N, 5°	bord and pillar	...	...	drive	698	1,004	3	hand	...	...	...	natural current	6/2/80
31	Shag Point, Palmerston	...	17	"	1	12	all	NE, 1 in 4	"	1	4' 9" x 2' 8"	engine-plane drive	18,724	50,441	120	engine	...	...	...	"	2/7/80
32	Elliott's, "	...	½	"	1	3' 6"	"	...	...	...	...	drive	...	...	none	"	...	...	...	"	3/2/80
33	Hill's Creek, Naseby	...	...	"	...	...	"	...	...	...	...	drive	...	...	4	"	...	...	...	"	"
34	Hyde, Hyde	...	½	"	...	...	"	...	...	...	...	drive	...	...	...	"	...	...	...	"	"
35	St. Bathian's, St. Bathian's	...	...	...	...	...	"	...	openwork	...	...	...	135	140	1	"	...	...	...	"	...
36	Kyeburn, Naseby	...	6	...	...	...	"	...	...	...	...	drive	786	7,543	4	"	...	...	...	"	...
37	Welshman's Gully, Cambrian's	...	...	...	...	...	"	...	...	...	...	shaft	500	...	3	horse	...	...	...	natural current	24/2/80
38	Alexandra, Manuherikia	...	...	brown	1	14 to 15	6 to 7	S 75° W, slight NW	bord and pillar	2	50' x 5' x 2' 6"	"	765	4,800	3	"	...	...	...	windsail	25/2/80
39	Manuherikia, "	...	1	"	1	12	6	slight NW, 15°	"	1	60' x 5' 6" x 2' 9"	drive	520	520	1 u.	"	...	...	...	"	25/2/80
40	Cromwell, Cromwell	...	½	"	1	3' 6" to 6'	all	W, 15°	"	1	...	drive	150	300	1 u.	hand	...	...	...	natural current	22/2/80
41	Bannockburn, "	...	...	"	1	12	6	N 70° W	"	1	...	"	1,000	...	2	"	...	...	...	"	20/2/80
42	Kawarau, "	...	...	"	1	5' 6"	5	E, 60°	"	...	...	"	...	...	2	"	...	...	...	"	21/2/80
43	Bannockburn, "	...	...	"	...	...	"	...	"	...	...	"	...	...	none	"	...	...	...	"	20/2/80
44	Clyde, Clyde	...	8	brown	1	20	10	SE, 5°	bord and pillar	...	...	drive	820	...	1	Carried on man's back	...	...	...	natural current	24/2/80
45	Earnslough, Clyde	...	3	"	1	16	12	varies	"	1	...	"	300	...	2 u.	horse	...	...	...	"	"
46	Clyde, "	...	...	"	...	...	"	...	...	1	...	shaft	none	15,500	none	"	...	...	...	"	23/2/80
47	Gibbstown, Gibbstown	...	...	"	...	...	"	...	...	...	...	...	1,000	...	3 to 4	"	...	...	...	"	"

RETURN No. 1—continued.  
STATISTICS OF WORKINGS IN COAL MINES—continued.

Number.	Name of Mine and Locality.	Name of Manager.	Number of Years Working.	Quality of Coal.	Number of Seams Worked.	Thickness of Seams.	Thickness Worked.	Dip of Seams.	System of Underground Working.	Number of Shafts.	Dimensions of Shafts.	Output Delivered by	Output for 1879.	Approximate Total Output for 31st December, 1879.	Number of Men Ordinarily Employed.	Power used for Drawing Mineral.	Stroke of Pumps.	Size of Barrel.	Height of Column.	Ventilating Power.	Date of Inspector's Last Visit.
48	McPherson's, Roxburgh	McPherson, A.	10	lignite	1	25	20	NW, 16°	openwork	...	...	...	60	...	2	...	6"	6"	...	...	26/2/80
49	Crawson's, Roxburgh	Crawson, R.	16	lignite	1	28	20	varies	openwork	...	...	...	60	500	1	...	...	...	...	...	27/2/80
50	Low and Robertson's, Roxburgh	Low, John	2	brown	1	20	20	N 10° E,	"	...	4' x 9" 3' x 6"	drive	400	5,000	2	hand	...	...	...	natural	28/2/80
51	Fernhill, Green Island	Shaw, J. E.	19½	...	1	19½	7	1 in 10	bord and pillar	1	...	...	3,161	3,293½	12 u.	...	...	...	...	current	8/1/80
52	Green Island	Above, Sample, J.; below, Richardson,	7	"	1	14	7	E 10° N,	room and rance	1	12' x 4' 6" x 130'	shaft	7,500	48,374	20 u.	engine 15 h. p.	3'	7½"	130	"	4/2/80
53	Otago, Saddle Hill,	Campbell, R.	5½	"	1	19½	11	E, 1 in 10	...	1	8½' x 4½'	...	...	9,000	...	horse	...	...	...	...	16/1/80
54	Walton Park,	Louden, James	9	"	1	18	7	E, 1 in 9	"	2	12' x 4' 6"	"	16,549	158,655	37 u.	engine	4½"	11"	175	natural current	12/1/80
55	Abbotsroyst,	Freeman, James	4	"	1	16	7	E 10° N,	"	1	2' 6" x 5'	dip drive	6,280	19,461	12 u.	horse	...	...	...	"	22/1/80
56	Lawrence, Lawrence	Spence, James	...	lignite	1	3½	all	SW, 1 in 8	...	...	3' x 3' 6" x 32'	shaft	705	2,056	1	windlass	...	...	...	"	29/1/80
57	Frying Pan, Havelock	Samuel, Henry	1	"	1	6½	6	NW, 5°	...	1	...	drive	none	none	2	hand	...	...	...	"	2/2/80
58	Johnston, Johnston	...	1	"	1	6	6	varies	room and rance	...	...	"	1,150	5,083	1	"	...	...	...	natural current	13/1/80
59	Bruce, Milton	Miller, J. B.	5½	pitch	1	3 to 11	all	...	...	...	...	"	...	...	...	"	...	...	...	"	17/1/80
60	Real Mackay, Milton	Wilson, R.	11½	"	1	25	8	NE to E,	"	1	...	"	900	8,523	2	"	...	...	...	"	17/1/80
61	Elliott Vale,	Young, A.	...	"	1	20	8	S, 22° W,	"	...	...	"	450	...	1	"	...	...	...	"	20/1/80
62	Hurdstone,	Miller, J. B.	9	lignite	1	9	all	level	bord and pillar	...	...	"	66	66	1	"	...	...	...	"	20/1/80
63	Cannon's,	Cannon, T.	9	"	1	20	20	varies	openwork	...	...	"	none	...	1	"	...	...	...	"	30/1/80
64	Bryce's,	Bryce, James	1	"	1	12	8	...	"	...	...	"	300	...	2	"	...	...	...	"	31/1/80
65	Benhar, Stirling	Nelson, James	15	brown	1	40	8	S, 17°	bord and pillar	...	...	engine-plane drive	3,264	12,090	6	engine 8 h. p.	3"	6"	40'	natural current	9/1/80
66	Phœnix,	...	4	"	1	40	8	SE, 10°	"	...	7' x 5'	"	...	...	2	windlass horses	...	...	...	"	16/8/79
67	Kaitangata Railway and Coal Company's, Kaitangata	Samson, W.	4	pitch	1	27	10 to 24	WNW, 1 in 7	"	2	...	"	14,197	44,197	41 u.	...	...	...	...	furnace	14/1/80
68	Shore's No. 1, Kaitangata, Kaitangata	Shore, William	2	pitch	1	30	8	WNW	bord and pillar	1	11' 9" x 4' 6"	shaft	5,319	12,812	16 u.	engine, 16 h. p.	bkt. and r.	cage	...	furnace	3/1/80
69	Chittock's, Gore	Chittock, F.	3	lignite	1	9	all	N	open work	...	...	...	520	...	1	"	...	...	...	"	4/3/80
70	White's,	White, W. W.	3	"	1	9	"	SE	"	...	...	...	...	...	1	"	...	...	...	"	"
71	Sarginson & Telfer's, Kaitangata	Sarginson & Telfer, owners	...	"	1	8	"	SE	"	...	...	...	24	...	1	"	...	...	...	"	"
72	Dawson's,	Dawson, T. A.	2	"	1	6	"	SE	"	...	...	...	200	...	1	"	...	...	...	"	"
73	McNab's,	...	...	"	...	...	...	...	"	...	...	...	15	...	...	"	...	...	...	"	"



RETURN No. 2.

RETURN of the QUANTITY and VALUE of COAL IMPORTED and EXPORTED from NEW ZEALAND, for the Year ended 31st December, 1879.

Countries from whence Imported.	Coal Imported.		Countries to which Exported.	Coal Exported.		Remarks.
	Quantity.	Value.		Quantity.	Value.	
	Tons.	£		Tons.	£	
United Kingdom ...	1,162	2,012	New South Wales...	3,100	3,100	3,100 tons, valued at £3,100, were exported from Russell; and 3,502 tons, valued at £2,984, from Greymouth.
New South Wales ...	156,699½	219,140	Victoria...	3,904	2,987	
Victoria ...	200	262	Norfolk Island ...	1½	1	
Tasmania ...	15	43	South Sea Islands	190	180	
Totals ...	158,076½	221,457	Totals ...	7,195½	6,268	

WILLIAM SEED,  
Secretary of Customs.

RETURN No. 3.

LIST of ACCIDENTS in COAL MINES during the Year ending 31st March, 1880.

District.	Mine Owner.	Date of Accident.	Cause of Accident.	Killed.	Injured.	Remarks.
		1879.				
Waikato...	Waikato Coal Com- pany	July 18	"Foul" or "sooty back" giving way	1	...	Verdict at inquest: "Accidental death."
Westport	Westport Colliery Company's Fisher Mine	August 13	Torn by a truck hook	...	1	Injured man's carelessness.
Greymouth	Coal Pit Heath Coal Company	August 14	Fall of coal	...	1	Reported by Mr. Inspector Binns.
Otago ...	Benhar Mine ...	September 3	Explosion of gun- powder	...	1	" " "
Kawakawa	Bay of Islands Coal Company	December 6	Explosion of gun- powder	...	1	Injured man's carelessness.
		1880.				
Otago ...	Shag Point Coal Com- pany	February 14	Fall of stone from roof	...	1	The manager states that half an hour prior to the accident he and the underviewer had examined the place, which at that time appeared perfectly safe for working.
Greymouth	Brunner Coal Com- pany	March 3	Explosion of fire- damp	1	1	Verdict at inquest: "Deceased died from an explosion of fire-damp in the Brunner Mine."

By Authority: GEORGE DIDSBUY, Government Printer, Wellington.—1880.