1887.

(THIRD SESSION.)

NEW SOUTH WALES.

Legislative Council.

J. G. Hutton

BULLI COLLIERY ACCIDENT.

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APPENDICES.

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PAGE.

1. Geological Section of Coal-seams in the Southern District 179

2. Chart of the Coast and of Illawarra, showing the position of the eight existing Collieries 181

3. Section of Upper Coal-seam and of superincumbent strata 183

4. Plan of portion of Bulli Colliery, showing the main roads, doors, air-crossings, dykes, the Western and Hill End Districts, reduced from Colliery Plan of ½ in. to 1 chain 185

5. Plan of the Western and Hill End Districts, surveyed for Commission, showing positions of rolls, &c., stoppings, doors, &c., falls, the position of bodies and of horse, with remarks on the condition of the Mine 187

6. Inspector Rowan's Reports 189

7. Dr. Llewellyn's evidence 189

8. The Examiner of Coal-fields Reports on the Accident 191

9. Analysis of Coal Dusts collected by members of the Commission 194

10. Copies of General and Special Rules in force at Bulli Colliery 194

11. Copy of Engagement Rules 196

BULLI COLLIERY ACCIDENT.

REPORT OF ROYAL COMMISSION.

To His Excellency the Right Honorable Charles Robert Baron Carrington, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

May it please your Excellency,—

The Commission appointed to make a diligent and full inquiry into the cause of the explosion that recently occurred at Bulli Colliery, in the district of Illawarra, in this Colony, whereby many valuable lives were sacrificed, and also to investigate all the surrounding circumstances, in order to ascertain whether blame attaches to any person or persons, and if so, to report the person or persons to whom in our opinion the blame attaches; and, further, to make any recommendation affecting the general management, especially the ventilation of collieries, and to offer any suggestions which we may deem advisable for the amendment of the law relating to the working of coal-mines, especially with the view of preventing the accumulation of dangerous gases,—have concluded their inquiry into the cause of the said explosion, and, with the aid of voluminous evidence transcribed from the shorthand-writer's notes, have unanimously agreed upon the following description of the mine, the extent and nature of the explosion, particulars relative to the ventilation and conduct of the operations, the findings or conclusions, and the recommendations that they propose in order to ensure safety and proper discipline, also a *résumé* of the work accomplished and the evidence taken during the sittings. These, together with the documents and plans detailed on the margin hereof, the Commission have the honor to present to your Excellency.

A general meeting, at which all the then members of the Commission attended, was held in Sydney on the 5th day of May, when, considering the urgency of the inquiry, it was agreed to proceed to the scene of the explosion, and at once commence their investigations. Accordingly, they left for Wollongong by the evening steamer.

Early the following morning (the 6th) the Commission considered the question of the most suitable locale for holding their inquiries, when it was unanimously considered expedient to examine witnesses in Wollongong. Accordingly, having left one of their number to make suitable arrangements towards this end, the remaining members of the Commission at once proceeded to the scene of the explosion, and having by pre-arrangement met Mr. Inspector Rowan, they at once proceeded into the mine, and conducted by Messrs. Rowan, Ross, and White, narrowly inspected the mine and the damage to plant, with the object of arriving at an independent opinion as to the cause of the explosion, and the remedies to be applied.

For

For the purpose of ascertaining beyond all doubt the exact condition of the mine, and the position of the bodies as seen by the first search parties, the Commission considered it prudent to summon some of the volunteers who could best inform them on these subjects. Accompanied by Messrs. Jones, MacCabe, Evans, M'Kenna, and N. Hobbs, the Commission revisited the mine on the 7th, and again on the 9th, and minutely inspected the whole of the mine affected by the explosion, and were thereby enabled to form precise and independent opinions as to the cause of this unprecedented and deplorable accident.

Convenient premises having been secured, and most satisfactory arrangements made for taking evidence, the taking of evidence was commenced in public on the 10th, and was continued till the evening of Tuesday, the 17th May, when the Commission, having exhausted the evidence obtainable in the district, adjourned *sine die*.

Having by public advertisement inserted in the local papers, and by posters distributed throughout the district, invited the attendance of anyone desirous of giving evidence touching the inquiry, the Commission again assembled at Sydney, on the 6th day of June, and proceeded to Wollongong for the purpose of examining those who were prevented from giving evidence during the first sittings, and who desired to do so. In response to their invitation only five witnesses presented themselves.

On the 8th June the Commission, desirous of ascertaining by personal inspection whether any additional evidence was obtainable in support of an hypothesis put forward by the Examiner of Coal-fields as to the primary cause of the disaster, again visited the colliery, and having narrowly examined the main tunnel, and satisfied themselves upon this point, proceeded to Sydney and adjourned.

After the arduous and tedious work of transcribing the voluminous notes of the shorthand-writers had been completed, and having been requested to examine a man who emerged from or had left the mine a short time before the occurrence of the explosion, the Commission again assembled at Sydney, on Monday, the 27th day of June, and having examined Edward Kerrison, at once proceeded to consider the multifarious points referred to in the course of the inquiry, and during the inspection of the mine, and after serious and mature consideration of every point or circumstance of importance, they unanimously agreed upon the "findings" or conclusions given in the sequel.

In the work of inspecting the colliery, collecting and preparing information, taking evidence, and deliberating upon and considering this Report, the Commission sat during eighteen days, each sitting averaging five and a half hours, irrespective of the arduous and necessary work of preparing work in advance, and in this way expediting the work of the Commission. This occupied several hours daily, and could only be undertaken after the exhausting work of the day had been concluded.

The portion of the picturesque mountain range of Illawarra that surrounds a small bay about 8 miles north of the seaport town of Wollongong, and about 35 miles south of Sydney, and known as Bulli, has for the past quarter of a century been the designation of an important colliery and adjoining village.

The sandstone cliffs that are laved by the waters of the Pacific begin to recede at Coalcliff,, and to the south of that exposed promontory the ocean beats against escarpments of the Lower Coal-measures, or on sand-covered beaches representing the ruins of solid strata, disintegrated by the operation of natural and ceaseless forces through untold time.

At

At Bulli a fringe of level land, about 1 mile in width, intervenes between the coast range and the beach, and this distance gradually increases towards the south. At Mount Keira, near Wollongong, the range has receded about 2 miles from the sea, and here it suddenly swerves to the west for a distance of 4 miles to Mount Kembla, when it again breaks to the west for 3 miles, from which point it curves to the south, and approaches the sea in the neighbourhood of Kiama and Jervis Bay.

In Illawarra the mountains rise to an average elevation of 1,000 feet, the prominent eminences of Keira and Kembla rising respectively to the height of 1,568 and 1,760 feet. The eastern declivities of this mountain range possess all the features of the Blue Mountains—sloping sides, covered with a luxuriant vegetation of semi-tropical flora, capped by perpendicular cliffs, fissured with numerous indentations, gullies, and ravines.

The cliffs that form a background, and give special character to the district, consist for the most part of the lower portion of a unique deposit, probably of Tertiary age, known as the "Hawkesbury Sandstones," composed of inclined and horizontal beds of coarse, gritty, ferruginous sand and pebbles, of irregular and lenticular aluminous beds, enclosing boulders of transported rocks, the whole cemented by convoluted and segregated bands of hydrated iron ore, with embedded fragments of quartz. Some of these beds lie uncomformable on the older rocks.

These sandstones are intersected by regular joints or fissures, and they rest on peculiar reddish aluminous beds (that vary in thickness from 1 to 2 feet in the western to 10 to 15 feet in the southern or Illawarra Coal-field), that may be considered to mark the upper limits of the coal formation of New South Wales. Under this red aluminous bed is a considerable thickness of coarse sandstone, that towards the bottom becomes laminated and intermixed with bands of shale or bind, that overlie the upper coal-bed. This is succeeded by the other coal-beds of the series in regular sequence. These coal-seams, being separated by strata less resisting than the overlying sandstones, have yielded to the eroding action of climate and time, and crumbling, have formed the steep slopes that hide from view the outcrops of coal-seams and dividing strata.

The coast ranges under review are intersected by several lines or dykes of intrusive rocks. These seem to emanate from several centres of eruption. A cursory examination of the physical geology of the district is sufficient to convince the contemplative mind that in recent geological time it has been the theatre of one, if not two, eruptions of volcanic rocks. These, in a state of fusion, have been forced, in the lines of least resistance, through pre-existing rocks, as dykes; and over certain areas have (aided no doubt by conditions as yet obscure) been injected between the laminations of the strata, or into or below coal-seams. In other instances these igneous rocks have filled pre-existing crevices or rents, cutting through all the strata in the form of a wall or dyke. These intrusive rocks have apparently in some instances issued from crevices and flowed over wide belts of country, transmuting and crystallizing the older strata, or, from orifices, have poured in molten streams over certain areas. The rich alluvial bands of Illawarra have been formed by the decomposition of these eruptive rocks; and to this also may be referred the picturesque ravines and sombre crevices—even the very configuration of the scenery of the district is in large measure due.

The coal-seams of the Southern District are identical, although they have not been correlated, with the corresponding beds in the Western and Northern Districts. Taking Sydney as the centre of a vast mineral basin, the various beds gradually rise towards the north, and at Newcastle (65 miles north of Sydney) the lowest known workable coal-seam of the series approaches the horizon. In the Western District a coal-seam in the same stratigraphical position is extensively worked at Lithgow and Bowenfels. South from Sydney the beds also approach the horizon, and on the coast cliffs are seen to rise to the south-east. At Bulga, near Stanwell Park, about 26 miles south of Sydney, the strata are somewhat confused and disturbed by volcanic agencies; and at Clifton, about 35 miles from Sydney, the upper coal is seen on the cliffs, about 15 feet above the sea. Assisted by several faults south of Clifton, the coal-seams underlying the upper coal successively appear above the sea, and gradually recede into the coast ranges, still preserving their rise to the south-east. At Bulli the upper coal-seam is exposed on the cliffs, about 450 feet above the sea; at Mount Keira the altitude of the outcrop is about 550 feet; and at Kembla it is nearly 800 feet. A geological section showing the succession of the coal-beds in the Southern District is given in the Appendix, and marked No. 1.

Of the five workable seams in the Illawarra series only three have been operated upon. Of these the upper is by far the most valuable and important, and to it, practically, all the Southern Collieries have, since the first discovery of coal at Wollongong, ninety years ago, been confined. The coal-seam known as the 4ft. seam, and separated from the more important upper coal by about 30 feet of strata, has been worked to a limited extent at the Mount Pleasant and Bulli Collieries; while the bed of kerosone shale, representing the unique and valuable deposit of Hartley Vale and Joadja, in the Western Coal-field, has been found, and a small area worked about ten years ago, on the base of Mount Kembla.

The upper coal, to which operations have practically been confined, is one of the most important coal-seams yet discovered in the Colony, and has been extensively worked at the old-established collieries of Mount Keira, Mount Pleasant, and Bulli, and in later years at Clifton, North Illawarra, and Mount Kembla Collieries. In addition to these, operations have been resumed at Bellambi Colliery, while at Broker's Nose a new winning has been opened—in all eight collieries. The positions of these are marked on Plan No. 2, Appendix.

The upper coal-seam worked at the Southern Collieries, and known as the Illawarra or southern coal, is semi-bituminous, and is excellently adapted for steam purposes.

The following analysis of the coal as worked at Bulli Colliery will convey some idea of its value as a heat-producing agent:—

Analysis of Bulli coal, by Dr. Pery, London.

Carbon	75·57
Hydrogen...	4·70
Oxygen and Nitrogen	4·90
Sulphur	0·54
Ash	13·17
Water	1·03
	100·00

For

For Gas.

Coke	74·78
Volatile gaseous matter	24·19
Water	1·03
	100·00

It has a somewhat singed appearance, is dull and non-lustrous, and, being friable, produces dust by attrition or handling.

The Illawarra Mountains may therefore be considered as a grand escarpment of carboniferous and other superimposed rocks, exposing in their mural sides the whole of the coal-beds and dividing strata of the series.

These coal-beds have a general dip or pitch to the north-west of about 1–25, and do not in the course of working give off much water. This, in part, may be due to the natural drainage affected by many miles of exposed beds, to the low rainfall, and to the comparative infrequency of faults, slides, or disturbances that penetrate the strata.

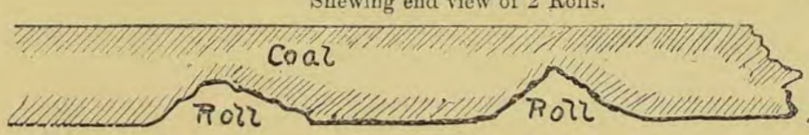
The upper coal-bed, as worked in the older collieries of the Middle Division (Mount Keira, Mount Pleasant, Bellambi, and Bulli), possesses some peculiar features deserving of notice.

In those collieries this bed measures from 8 feet to 10 feet in thickness of pure coal; while the roof is regular, the floor is subject to irregular waves, corrugations, or crumplings, known as "rolls," or "houses." Individually these "rolls" are localized; they begin, grow, and terminate within a short distance. Very rarely can the same "roll" be traced for any considerable length, but where one ends another may begin; nor do these maintain a uniform course—they are subject to infinite variations.

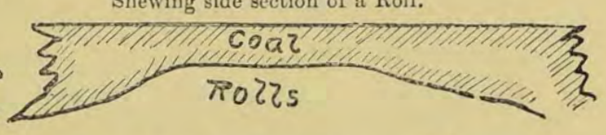
The following imaginary sketches represent a plan and section of two of these rolls:—

Plan.

Shewing end view of 2 Rolls.

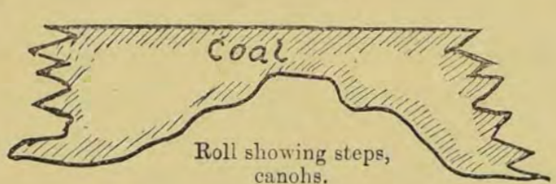


Shewing side section of a Roll.



and may convey some idea of how these irregularities in the floor occur, and impede the working and winning of the seam.

These rolls are perplexingly irregular. As a rule the sides form steps, or "canohs," as follows:—



Roll showing steps, canohs.

As a rule the long diameter of these follows in a rough way the natural "reed" of the coal, but in actual working the bords or working-places are so directed that they shall run in the same course as the "rolls." So frequently do these occur that in some parts a "roll" divides or separates every bord. (*Vide* plan and section, No. 2 headings.) These seriously interfere with the laying out and winning of a colliery.

colliery. Where nature has interposed so many obstacles it is next to impossible to conduct with regularity the operations for abstraction of the mineral. As a general rule the irregularities referred to do not cut off the whole thickness of the coal-seam; a few feet of coal are, as a rule, left above the apex of the ridge, and this facilitates the work of passing over and removing the irregularity.

Strange to say, these disturbances are solely confined to the horizon of the upper coal-seam. In the "4-foot" seam underlying the upper bed no such irregularities have been found, even under positions where the upper coal was particularly affected by these distracting occurrences. It is somewhat difficult to assign a cause for these curious irregularities of the floor. Suffice it to say that they manifestly point to violent eddies or currents that occurred prior to the deposition of the coal-seam. They are composed of aluminous schist and siliceous materials, evidently deposited by water.

The presence of so many rolls limit the scope by paralysing the scheme of the manager, and prevents a colliery being economically won by pursuing some of the regular and approved systems for recovery of the mineral that have found most favour in the principal colliery districts of the old world. Under such conditions no system can really be laid down and implicitly followed. Circumstances that cannot be anticipated must guide the manager from time to time in maintaining an output. The distance between bords, their width and direction, or the size of pillars, cannot possibly be predetermined. The "cut-throughs" that connect two bords—and which, according to the 4th sub-section of the 12th clause of the Coal Mines Regulation Act, 1876, must not exceed 35 yards from each other—cannot, on account of the uncertain occurrence of these rolls, be spaced with the mathematical precision possible in districts where the continuity of the coal-seams is unaffected, or as contemplated by the framers of the Act. It often occurs that to avoid driving these "cut-throughs" in stone at great cost the manager is obliged to place them at irregular intervals, and in positions where they can be driven in the greatest thickness of coal. The somewhat irregular and unique character of the workings in the Southern Collieries is principally due to the causes described.

Bulli Colliery was commenced about twenty-five years ago, by a Company incorporated and trading under the name of the Bulli Coal-mining Company (Limited). An adit was put into the coal-seam at the most suitable point of its outcrop, and driven towards the dip of the strata. The "bords" or "stalls" (working-faces) were broken off headings branching off the main tunnel at convenient intervals. The course of this tunnel is N. 75° W. The tunnel mouth is about 450 feet above the sea, and the coal, after being screened from the skips into larger waggons, is sent down a steep self-acting incline to the base of the mountain, whence it is conveyed in trains by a locomotive to a private jetty on the sea-coast, where it is shipped into the Company's steamers and conveyed to market. The colliery has for the long period of twenty-three years been under the management of Mr. Alexander Ross, who, from his earliest years (*vide* evidence), has followed the profession of mining in the large collieries in the north of England and in this Colony. Among his compeers he is considered a careful, cautious, even-tempered man, and a successful manager.

The colliery has maintained a large and steady output since its inauguration, and, from that period, the upper coal has been worked from under about 580 acres. (See plan, Appendix No. 4.) A very considerable proportion of this area is, however, represented by "rolls." The main tunnels have penetrated a distance of 93 chains $= 1\frac{1}{6}$ miles from the adit mouth. The bords off the main tunnel to the north are worked

worked up to a dyke of diabase that entirely cuts off the coal-seam, singed and charred for some distance to the south. This dyke appears to maintain a course almost parallel to the main tunnel, and about 100 yards to the north of that roadway.

The presence of this diabase has had a most disastrous effect upon this part of the coal-field owned by the Bulli Coal-mining Company.

To the north of No. 1 and the diabase dyke referred to, a new tunnel, No. 2, or B, has been driven from the outcrop (where for a few chains only the coal was of excellent quality) for a distance of about a mile under the mountain range, the coal-seam being charred in places to a natural coke; in other places partially burnt and useless. Behind the range a large outburst of igneous rock occurs, that supplies metal for the Government roads. The coal in this division of the field has evidently been burnt by the permeation of heated gases through the rough sandstone contiguous to the coal.

Two varieties of igneous or intrusive rock seem to intersect the southern coal-field—dolerite and diabase.* Of these the dolerite appears to be the oldest, and it is curious to observe the change that is effected on and by this intrusive rock when in contact with carboniferous strata. In presence of coal-measures it assumes a cream colour, and rapidly decomposes, the coal being burnt to a cinder in the neighbourhood of the point of contact, and the shales altered to hornstones. The diabase dykes, on the other hand, do not exhibit these phenomena; and in an adjoining colliery the older dolerite is pierced by a dyke of recent diabase. Both of these, when compared with the coal-measures, are of recent age.

The colliery of Woonona, to the south of Bulli, and that of Bellambi, 3 miles distant, both contain areas of burnt or cindered coal; so that the old Bulli Tunnel (No. 1 or A) has been working a wedge of good coal between areas of country under which the upper coal-seam has been more or less destroyed.

The intrusive dyke to the north of the old tunnel under review threw down protuberances or arms, some of which approached, and at least two of these crossed, the line of the tunnel. (*Vide* Appendix 4.) Through these the main road has been carried at great expense.

On account of the old western sections of the workings becoming exhausted it became necessary, about three years ago, to obtain additional land. In consequence a lease was obtained from the Government of coal in the Hill End District.

To work this coal the main tunnel was advanced through a wide branch of the diabase dyke that stretched down from the north; at the same time a branch bifurcating from the main tunnel, at a point about 1,300 yards from the entrance, was pushed on to open up the new coal-field at a point further south than the main tunnel.

The projections of intrusive rock encountered in the main tunnel terminated before reaching the Western Road, but the coal in advance of the position of this intrusive rock in the Western District is much reduced in thickness, and is somewhat cindered or singed. In this section no marsh or light carburetted hydrogen gas is or ever has been given off.

About two years ago the mine or roadway that was being carried through the diabase fault in the line of the main tunnel touched the coal. A considerable quantity of gas (probably "fire-damp," or light carburetted hydrogen or marsh gas) issued

* Dolerite is a basaltic rock, composed of Labradorite spar and of augite, and is a typical trap-rock. Diabase is a recent rock, a basalt, and is composed of silica, alumina, sesquioxide of iron, and a little lime.

issued from the face, and forced the workmen to retire.* The gas was removed by means of bratticing† carried into the face of the mine; and this was continued until a separate return way had been obtained (*vide* Appendix No. 45) through the intrusive dyke.

The issue of gas from coal contiguous to or from a fault is no uncommon occurrence in mining; and special emphasis is laid on this circumstance because of the almost perfect immunity that Colonial collieries have hitherto enjoyed from the presence of marsh or light carburetted hydrogen gas. It is extremely difficult to discover how much gas really did issue from this roadway at this time. Considering that the ventilating current was at that period weak, the Commission are inclined to think that the quantity of gas was even then insignificant in amount.

As gas was still given off, safety-lamps (Davy) were issued to the whole of the workmen, and were used until the beginning of the current year, when, on account of a material improvement in the ventilation of the colliery, a change was made, to be hereafter referred to. In consequence of the presence of gas and the use of safety-lamps this part of the mine was known as the "gassy section."

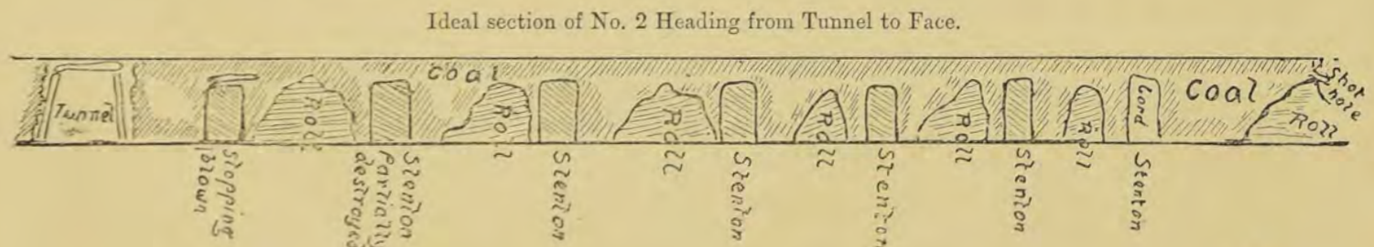
So far as the Commission can discover, the provisions of the 7th sub-section of rule 12, Coal Mines Regulation Act, referring to safety-lamps, was adhered to up to the cessation of work, about August of last year, when, from a disagreement with the workmen, the mine was closed for some months.

The main tunnel was continued into the coal inside the intrusive dyke, and after a return was obtained a double road was pushed rapidly into what was virtually a new coal-field, to attack the coal leased from Government at a point 374 yards to the north of western heading.

With the object of keeping up the output, a pair of headings, Nos. 1 and 2 (*vide* Appendix 4), were broken off about 20 yards inside the dyke and driven in a north-westerly direction. These headings are straight, and are separated by a pillar of coal 7 yards thick, and have been driven 232 yards from the main tunnel. Both of these "headings" from the first gave off gas; both were broken off the main tunnel or intake; and to maintain a circulation of air a single trap-door was placed on the main tunnel between them. This door being closed intercepted the air current and directed it up No. 1 heading, thence it passed through the last cut-through or "stenton" to No. 2, and circulated or coursed down to the main tunnel.

These headings crossed over numerous "rolls" (*vide* plan, Appendix No. 5), their general trend being N.E., and by referring to the plan (Appendix No. 5) it will be seen that one of these almost intervenes between every bord. A horizontal section of No. 2 heading is shown by the following sketch :—

Ideal section of No. 2 Heading from Tunnel to Face.



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* It may be pardonable for the Commission to state that "light carburetted hydrogen gas," or, as it is sometimes called, "olefiant gas," or ethylene—the "fire-damp" of miners—is composed of two atoms of carbon and four of hydrogen, and is represented by the chemical symbols C2 H4 or CH2; while methylic hydrogen—"marsh gas"—a much quicker and more sensitive gas, is represented by the symbols H4C, being composed of four atoms of hydrogen and one of carbon.

Both of these natural gases require the admixture of air in proportion to their chemical composition before an explosion, by the application of a naked light, is possible. In the case of ordinary "fire-damp" it has been found that nine parts of air to one of gas forms the most explosive mixture.

† Bratticing is an artificial division of an airway or underground road. This may be effected by means of planking, canvas, or corrugated iron.

The stentons (openings for air) between the headings have, so far as possible, been driven in the spaces between the rolls, where coal existed; but in some instances the two headings have been connected on the top of rolls. These appear to have been closed by packed walls of stone, backed by rubbish, and were, so far as the Commission could discover, secure and tight. "Stentons."

Bords have been broken off both headings, and are shown on the plans annexed. Appendix Nos. 4 and 5.

Prior to the strike the workmen employed in the bords, as well as in the headings, used nothing but safety-lamps, and these appear to have been carefully locked, in accordance with the provisions of the 7th sub-section of clause 12, Coal Mines Regulation Act. The Commission believe that no considerable amount of marsh gas was given off from these bords. The testimony of Mr. Inspector Rowan was most decided upon this point (*vide* Questions Nos. 5,070–5,089); and his accurate observations have infinitely more weight with your Commissioners than the statements of witnesses of less experience and intelligence, some of whom, when under examination, did not create a favourable impression. Before extending the rope haulage into this district it became necessary to straighten, heighten, and widen the original road.

About 80 yards from the adit mouth the road to the old Western or "slacky" section branches off to the left. The main tunnel may be said to commence at this point. It has been driven through the old pillars and rolls, and across the bords which have been built up. Heavy sets of strong timber were placed at short intervals to secure this passage. About 4 feet of aluminous sandstone bands overlie the coal-seam, and intervene between it and a thick conglomerate post. These sandstone bands are liable to "make" or separate from the conglomerate on exposure to damp air, and had before the explosion, over a considerable distance of this roadway, so separated and sagged down upon the timber sets referred to. From the bifurcation of the Slacky Road the new main tunnel began to rise towards the W.N.W., and continued so to rise for a distance of 1,170 yards, at an average pitch of 1 in 20. This part of the road was worked by a self-acting incline.

The coal was brought from the Western, or from the Straight-in, or Hill End, or gassy section, by means of tail-ropes worked by an engine placed at the mouth of the adit, to the out-bye side of the Western Junction, where a long "flat" or siding was arranged. From this point the trains were sent down the incline to the foot, at the junction of the Slacky Road, where, being disconnected from the main rope, the skips ran by gravity to the screens; a horse, attended by a boy, being required to drag the empty skips to the Slacky Road, for attachment to the incline rope.

The amount of gas given off prior to the strike (September, 1886) seems to have been insignificant, and did not, on the occasions when a thorough examination was made by the Inspector, call for any special mention by that painstaking official. Thus, Mr. Rowan, on 2nd September, 1886 (Appendix 6), reports as follows:—"Hill End District.—Thirty-six men and horses are employed, and supplied with 3,600 feet of air per minute. The miners in this division are working with safety-lamps, as the coal gives off a small portion of fire-damp, &c." * * * "I carefully examined every bord with a safety-lamp, but in no case did the fire (meaning gas) explode in the lamp. I also asked the miners if every care was taken. They said they believed so, and that the deputy made several inspections during the day."

The

The last paragraph, repeated in Mr. Rowan's evidence, is in strange contrast to the statements of several of the witnesses (*vide* Questions ————), yet who admitted that they never did complain to the Inspector or to any official. On the 22nd December, Mr. Rowan, in his report, remarks, "this is the division that used to generate fire-damp, and where the men, when working, had locked safety-lamps."

For some time it had become apparent to the management that the motive column produced by a furnace at the surface was insufficient to ventilate extensive workings, and overcome the drag occasioned by the great length of rubbing surface over which the ventilating current was obliged to pass. In short, the ventilating power had reached its maximum—it could do no more—and this was insufficient for the requirements of new and distant sections of the colliery, from which gas was or had been given off. No more than 12,500 ft. of air could be circulated in all the districts up to the cessation of operations about September, 1886.

For these reasons an air-shaft had been commenced on a convenient part of the mountain slopes over a point of the Slacky Road workings (return way) about 43 chains from the adit mouth. (*Vide* plan, Appendix No. 4.) This shaft is over 300 ft. deep. A large and excellently constructed furnace—fired from the end and both sides—was built, and this work was reported by the Inspector (Mr. Rowan) as being finished in his report dated 22nd December, 1886. (See Appendix No. 6.) The effect of this new furnace upon the ventilation of the colliery was—by increasing the grate surface, and *caeteris paribus*, the motive column—to cause a circulation of 34,000 ft. in the districts where not more than 12,500 ft. could be passed before; and in the Hill End section from 12,000 to 13,000 ft. circulated, where, prior to the new furnace being started, only 3,600 ft. passed. (Vide Report, Appendix No. 6.)

This furnace is surrounded by a large area of high and wide bords, and at the date of the accident three main returns passed into it.

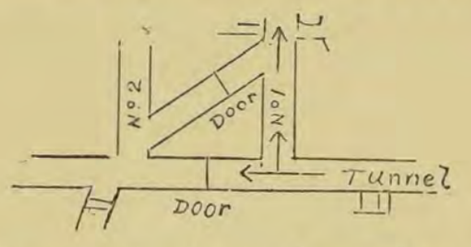
The returns coursed among the old bords, and considerable quantities of air scaled through and ventilated the abandoned workings.

The adequacy of these returns to circulate a large quantity of air is shown by the results of a minute record of the ventilation taken by Messrs. Rowan, Dixon, and Evans, at 9·30 a.m. on the morning after the accident, and which was as follows:—The Western return was passing 44,290 cubic ft.; the Hill End return was passing 37,410,—making a total of 81,700 cubic ft. And again, on the Monday following the accident (the 27th), the following quantities were found passing:—Western return, 59,740; Hillend, 23,635,—equal to a total of 83,375 cubic feet per minute.

The course of the ventilating current is shown by arrows on the plan, Appendix No. 4, and is as follows:—The current entering the adit mouth divides at the bifurcation of the Slacky Road; the main portion passes along the tunnel, and up the self-acting incline; the divided portion passes along the Slacky Road for 23 chains=506 yds., where a door (*vide* plan No. 4) was placed to prevent the current passing straight to the new furnace. This door directed the current to the right, and it passed up a cross-cut road known as the "Horse Road," and joined the main current passing up the incline, about 25 chains from the entrance. Stoppings (or walls) built of stone from the rolls, backed by small coal, confined the current of air to the main road. At the bank-head, or top of the incline, the road divides; the left-hand

left-hand road is the main hauling road to the Western section, which is directed so as to avoid the edge of one of the basalt dykes already referred to ; while the straight road, or Main Tunnel, is the hauling road to the Hill End section. A single door, with a regulator, or sliding shutter (*vide* plan No. 4), was fixed on the Western Road, a few yards inside the Junction. This door is kept shut, but the regulating shutter permits the quantity of air required for the Western section to pass through it and along that road.

The remaining portion of the air-current passed along the main tunnel until it was arrested by a single door placed between Nos. 1 and 2 headings. (*Vide* plan, Appendix No. 4 and 5.) Another door was fixed in a diagonal road that connected Nos. 1 and 2 headings near to the bottom, as per sketch and plan, No. 5 Appendix.



The object of this door was to direct the whole of the air-current up No. 1 heading, scaling into the bords broken off that road, and arriving at the furthest up stenton, it passed through that opening to No. 2 heading.

These stentons, or openings between two parallel roads, are necessary to permit the ventilating current to circulate ; and, by the 4th sub-section of the 12th clause of the Coal Mines Regulation Act, these must be spaced not more than 35 yards apart. To prevent any leakage of air, and consequent diminution of the current, where it is required at the face, each stenton, as the succeeding one is finished, is stored up with rubbish and the face built with stone, and, if necessary, plastered, to make it impervious to the passage of air.

Having passed through the last stenton, the air descended No. 2 heading, a portion scaling into the working-bords that have been broken off that road, and passing through the cut-throughs or openings between the bords the two currents join and enter the main tunnel. Inside the door (marked on plan, Appendix No. 5), and, passing towards the face, the current was again arrested by a door (marked on plan) fixed between Nos. 3 and 4 headings. This door, in like manner, directs the current up to the face of No. 3, which has been driven about 60 yards from the tunnel, and passing through the stenton courses down No. 4 heading and into the main tunnel face. It then ventilated No. 5, or the face of the main tunnel, and passed down to No. 6—a new heading just broken off to the dip,—and from thence, having performed its circuit, it coursed along the return, marked with a black arrow. It then circulated through the headings marked (B) on plan No. 5, and passing through the intrusive dyke it followed the course indicated by arrows. This part of the return is capacious and in good travelling condition. Before coming to the Western Road a door was fixed. This door permits the passage of the wastemen or officials, but directs the effete or fouled air to the left, where it passed up an incline road, and over an "air-crossing," or a bridge constructed of thick planks of timber, it was conducted above the pure intake air passing along the Western Road, and entering the old workings was drawn into the new furnace referred to.

It may be mentioned that from the air-crossing described, although there was ample space for the free passage of an abundant ventilating current, yet from the tender state of the bands of stone under the strong conglomerate roof, many falls had

had occurred in the abandoned bords, and it was travellable with difficulty. Scaling, as the return air did, through several old bords, ample space for the passage of almost any quantity of air was afforded, although the occurrence of falls would render the passage of men a work of some difficulty. This condition of the returns did not, it would appear, escape the notice of the Inspector, who, in his report dated 22nd December, 1886 (see Appendix 6), refers to his inability to pass through the return airway, when Mr. Ross, the manager, promised to put it in order when the strike was settled. On the 2nd of March, 1887, Mr. Rowan reports as follows:—"On examining the return airway I found that heavy falls of roof had taken place. The falls were so heavy I could not make a passage through. I drew the manager's attention to this matter. He stated that he had three shifts of men working making a new aircourse, and the same would be kept working until a proper recognized airway was made from the working-faces to the ventilating furnace. As I formerly reported, a number of these falls took place during the recent strike."

The Manager had not attempted to resile from this promise, and at the time of the accident the overman White, with one Cavill, was visiting this road in the hope of calling through to the men working from the western side. The position of White is shown on plan No. 4, and is marked by (c). The falls through which the overman was attempting to "call" or "knock" saved the life of him and his companions, while the men on the other or western side were lost. This return was at the date of our inquiry so far cleared as to permit men to travel (*vide* Ross's letter, 1887).

The doors (described) that were fixed in the main road were single, and, while trains of skips were not passing, directed the ventilating current. During the passing of trains these doors remained open, and at that time partially disorganized the air-current. To prevent delay in closing or damage to the doors, attendants (trappers) were provided. These doors are fixed on main roads. It is not uncommon to arrange double doors so that one is at all times closed, and in this way the regularity of the ventilating current is maintained. Where long trains of skips are hauled by machinery it is often very difficult to duplicate the doors. In the case of Bulli the length of trains would have necessitated their being placed 160 feet apart. This, under the circumstances, would have been impossible, and the practice is not pursued in any Australian colliery.

From calculations hurriedly made during the examination of some of the witnesses (*vide* Mr. MacCabe, Question 3871) it was apparent that the doors did not require to remain open more than about twelve minutes during each day, or more than half a minute on each occasion of the passing of a train. Some days before the accident the overman found the door between Nos. 1 and 2 headings propped open, and for certain reasons accused a witness (James Crawford), who was then a deputy, of having done so. With this exception, the Commission have no reason to think otherwise than that these doors were carefully attended to, and that the opening of them did not seriously interfere with the ventilation.

It will be seen from the foregoing description that the system of ventilation employed at Bulli was a "sweeping" one, consisting of one undivided current for each section. The enormous capacity of the bords, compared with that of portions of the tunnel, precluded the possibility of any marked current at the working-faces. The current entering No. 1 heading was permitted to scale into the bords, but was not

not directed thither by any screens or other devices. The current was not directed into the face of the heading in advance of the air by means of fanners, air-pipes, or by brattice, *i.e.*, a temporary division in the roadway permitting the air-current to pass up one side and to return on the other.

It will be observed by referring to plan No. 5 (Appendix) that the first two bords off No. 1 heading had been worked back to the dyke, and that one of these bords had been built up or stowed full of rubbish. These are marked on the plan (a). None of the other bords had been worked more than 36 yards from the heading, and only Nos. 3, 4, 5, and 6 bords had been connected by a cut-through. In No. 2 heading the same remark applies. The bords had only been driven sufficiently to permit of the four lowest (nearest to the tunnel) being connected by cut-throughs. In Nos. 3 and 4 headings only two bords had been broken off.

The Hill End section was thus to all intents a perfectly new coal-field, separated from the older portion of the colliery by the dyke described and shown upon the plan. This natural barrier prevented the older workings from draining off the gas that is probably given off more or less by every colliery, especially those tapping untouched or virgin coal-fields. The numerous "rolls," likewise, had a tendency to imprison the natural gases, and to cause them to exude when these natural barriers were exposed. There was no extent of workings opened up. The men were working close to the heading. No room existed for the dissipation of force in event of an explosion; and to the limited area of ground opened up the Commission ascribe the great loss of life that occurred.

The Commission have some doubt as to whether any gas exuded from the coal in the working-bords off Nos. 1 and 2 headings. They are convinced that if any was given off it was in minute quantities, and soon after the section was opened up. They are, however, satisfied that Nos. 1 and 2 headings, going, as they did, in advance of the bords, crossing the rolls, and opening up new ground, always did give off more or less gas. Being the highest point of the whole underground workings they were the most likely spots for gas to accumulate, because of its low specific gravity when compared with that of air.

The evidence of the witnesses examined is most conflicting upon the quantity of gas given off in this section. Excepting Nos. 1 and 2 headings, the Commission are inclined to accept the testimony of the only trustworthy authority that submitted themselves for examination—Mr. Inspector Rowan—who, although his visits were frequent, yet found no amount of gas in this section, and the minute examination of the colliery by the Commission confirms this. No gas whatever was detected by them in any of the bords off Nos. 1 and 2 headings, and only in the face of these headings. The evidence of the Manager, Mr. Ross, who did not often inspect the workings, and of his overman, Richard White, points to the presence of small quantities of gas only. Several of the witnesses, some of whom have not worked in the mine since the strike, and who evinced a considerable amount of feeling, described the gas as issuing from "blowers" or "hummers" with a noise that could be heard a considerable distance off; that they were supplied with lamps that had no gauze. This starting statement emanated from men who had no extensive knowledge of mining, or any previous experience of fire-damp. The statement so confidently sworn to as to the condition of the safety-lamps by Wm. Becton and Noah Hobbs was indignantly denied by the old deputy, James Crawford (Question 3575.)

In

In other respects the statements of these witnesses were not borne out by those of calmer, more intelligent, and truthful men. The Commission have evidence of a small blower in No. 1 heading from whence gas issued for some weeks into which a pipe was fixed. It, however, appears to have issued with no great force.

The evidence referred to portrayed the alleged condition of affairs prior to the cessation of work in September, 1886.

Before the new furnace started the whole of the men employed in the Hill End section worked with safety-lamps. These were locked, the lock, as is the case with the majority of Davy's lamps, consisting of a screw. The overman alone kept a key wherewith, at an appointed station, he could open and relight a lamp that had been extinguished. This is a precaution that has no great value, seeing that such lamps can be unlocked by a nail, a strong pin, a knife, or other instrument that the most strict disciplinarian could not object to being introduced into a mine. Under such circumstances the security afforded by a "locked Davy lamp" is to some extent illusory.

This section of the workings was, in accordance with the provisions of the Special Rules, No. 4 (but this rule does not refer to the presence of "fire-damp"), inspected by a competent person before the men commenced their daily operations.

Before the new furnace was started, and while no more than 3,500 feet of air circulated, safety-lamps were used in every working-face in the section.

When the furnace was completed, and the quantity of air increased to 12,500 feet, and no gas was given off in the bords, the use of safety-lamps where gas was given off, at least in small quantities, was confined to the winning off or "fast" headings Nos. 1 and 2, 3 and 4, 5 and 6. In the ordinary working-faces open lights were used by the workmen.

It will thus be observed that the use of safety-lamps was, since February of this year, confined to the leading winning off or "fast" headings going in advance of the ordinary bords.

It would appear that the provisions of the Act with reference to the use of safety-lamps (7th sub-section, clause 12, Coal Mines Regulation Act, and No. 16 of the Special Rules) were not, since February 7, 1887, complied with, although this circumstance may have been unknown to the Manager. The provisions of the 4th Special Rule dealing with danger-boards were, however, complied with. We find that "danger-boards" were fixed at the last "stenton" in a conspicuous position. Beyond this no naked lights were permitted. It was clearly proved that wheelers (the lads whose duty it was to remove the loaded skips and return empties to the face), who worked with naked lights, were in the habit of leaving their lamps on the ground or hanging to the post supporting the danger-board; and after the explosion one of the search parties actually did find an ordinary lamp hanging on the prop supporting the danger-board in No. 1 heading, the solder being fused into beads or globules.

The result of ventilating by the system described was as follows:—The pure intake air sweeping up No. 1 heading, and diffusing through the bords, would of course take up and absorb any gas that existed in this part in quantities too minute to give any indication on a safety-lamp. At the face of No. 1 heading it would remove whatever gas existed within its sweep, or that had rolled down towards the

stenton. The quantity of gas so liberated and removed would be variable, and probably in comparison with the large current of air was insignificant. Partially fouled the current passed from No. 1 to No. 2, where the amount of gas given off probably exceeded the quantity given off from No. 1. Fouled by the gas from these headings, instead of being sent direct into the return, it was circulated, and supplied the bords off No. 2, which were really in the return way. The workmen in these bords, however, worked with naked lights. From this the same current supplied Nos. 3 and 4 and 5 and 6 headings.

The Commission are convinced that, although practically no gas was given off *in these bords*, the practice of working with naked lights after the intake air was more or less fouled by the gas exuding from Nos. 1 and 2 was, in the absence of bratticing, or some means of sweeping off the gas as it escaped from the coal, reprehensible. In the absence of bratticing, the space between the face of these headings and the last stenton in advance of the ventilation must have been a magazine, so to speak, for the stowage of gas. At all events, under the circumstances of this section, it would have been better practice to have passed the ventilating current over the main tunnel direct into the returns without requiring it to do duty in the ventilation of the other headings. Some such practice would have obviated the necessity for doors on the main roads, and reduced the risk of danger to a minimum. The Commission are aware that the absence of this latter precaution did not (in all probability) cause or contribute to this accident; but it betrayed an absence of forethought, or of erudition and skill in dealing with gas, that ought not to have been displayed by a manager or overman of the long experience of either Mr. Ross or Mr. White.

The arrangement for firing shots in this section was unusual and unsatisfactory. The Manager appears to have given orders which, if carried out, would have insured a measure of safety; but he appears to have so seldom visited this district with a critical eye to see whether his orders were in practice carried out that his very apathy may have induced carelessness and foolhardiness on the part of his officials and workmen. No better proof of this could be afforded than the manner in which shots were fired. The orders were for all shots to be fired by the deputy; and the Commission believe that, while safety-lamps were used by the ordinary miners in the bords, this custom was practically adhered to. It would also appear that Mr. Ross had given instructions to fire no shot in the actual presence of gas. So far this was as it ought to have been, but to remove the gas the ancient and perfunctory method of beating it out with a garment into the air-current was resorted to. While the management gave orders to remove the gas they provided no effectual means, such as bratticing, for doing so. No surprise need be excited if the operation was imperfectly performed or neglected. The headings were "special places," and driven by contract at an increased cost, by specially selected, and competent, and picked men. These headings were carried on night and day continuously. During the night-shift, when the specially selected men were alone at work, no deputy was provided, but the day deputy locked the lamps, or was supposed to do so, and the contract men fired their own shots. This is not unusual, and with competent men—as capable as any deputy perhaps—no special danger was incurred, but it would have been wise to have constituted one of these men a deputy to fire shots.

The mode of preparing shots was also unsatisfactory, and appears to have been as follows:—The men charged the shot and tamped it without any supervision or instruction. The tamping material was left to the choice of the workmen.

workmen. While some careful men may have used pounded stone, damped with tea or water, the majority seemed to have used small coal or dust, and were not too particular as to the damping of it. As a rule, ordinary Beckford's fuse was employed to ignite the explosive (which was ordinary loose or compressed powder cartridges), and about 6 in. of this was left outside the hole. To ignite the fuse the safety-lamp was tilted on its side, and by so doing the flame impinged against and spread along the side of the gauze. As a rule, touch-paper (composed of ordinary brown paper soaked in saltpetre) was applied to the gauze; the flame in the inside was thus communicated to the touch-paper on the outside, and thus the fuse was ignited. So callous and careless had the men become that one man, Wood, working in the special heading No. 2, actually admitted that to avoid the trouble of lighting a shot by the means described he had lit the fuse by striking an ordinary lucifer match. With such men no orders probably would have ensured any safety to the other workmen. Illustrating the danger of the practice of tamping shot-holes pursued, the Commission were informed by ——— that about five days before the accident a shot so tamped (probably overcharged) had actually ignited the gas in No. 2 heading. No more reprehensible or dangerous practice could have been resorted to, and the Commission are surprised at the absence of strict orders dealing with the whole *modus operandi* of preparing and firing of shots that would have ensured safety. In the event of an overcharged shot the effect of tamping with small coal would probably be little better than tamping with powder; while inches of burning fuse in the presence of gas was to all intents courting an explosion.

Contrary to all discipline and common-sense, the workmen were permitted to take into this district matches and tobacco-pipes, and to smoke. In the case of the workmen in Nos. 1 and 2 headings, smoking was permitted anywhere under or outside the danger-board. Two days before the accident (*vide* Scott, Hope, and Morgan, Questions 358, 615, 2,913) the gas in No. 1 heading was lit by the wheeler's lamp hanging on the prop supporting the danger-board. While the Commission regret the absence of orders calculated to maintain constant and rigid discipline, and careful solicitude for the safety of the workmen, they cannot overlook the carelessness and the total disregard of the most ordinary precautions on the part of the men, many of whom, knowing the danger incurred, took no steps themselves to ensure the general safety.

This colliery has been from its commencement a peculiarly dry one. No water was given off in the mine. The coal was friable, and, falling on the roads, became pulverised into impalpable powder. Towards the conclusion of a busy day the air became loaded with clouds of dust, that rose in obedience to the slightest disturbance. To remedy this to some extent the Manager had for some time been in the habit of watering the main road, but this practice did not extend to the headings or working-faces. An atmosphere laden with impalpable dust has of late years been proved to be a source of no small danger on the application of an open light.

In collieries the part played by dust in the case of an explosion has long been suspected. In recent years special attention has been given to this recondite subject, and elaborate experiments have been made with the object of ascertaining the behaviour of dusts of various grades and qualities under the usual conditions existing in a coal-mine.

While some authorities are of opinion that coal-dust in a certain minute state of division or fineness may of itself explode and produce all the direful effects of an ordinary explosion, and that, in point of fact, some of the more recent explosions in Britain

Britain have been attributable to dust alone, it has, without any doubt, been proved that the presence in the atmosphere of a mine of quantities of finely divided coal-dust, with gas, intensifies the effects that would otherwise follow from an explosion of gas alone. The presence of a dust-laden atmosphere increases the intensity and effects of an explosion. By its aid the length and intensity of flame is increased. The flame of an explosion that otherwise would be confined to a limited area may, by the presence of dust in the atmosphere, be prolonged, or projected, or carried to distant localities, and ignite accumulations of gas in those localities. The enormous surface presented by coal in a minute state of division (dust) to the action of flame induces instantaneous combustion, and the production of gases inimical to animal life. By distillation gas itself may be produced which, on the recoil of the first explosion, may be ignited, and so increase the effects originally produced. An explosion of gas in a dusty mine is generally productive of results more disastrous than an explosion of gas in a mine where no dust exists. The terrific effects of some explosions where a very small quantity of gas could have existed is thus explained.

We are of opinion that the explosion at Bulli Colliery is one of the most notable instances of this on record.

Accident.—At 2·30 p.m. on Wednesday, the 23rd day of March, a loud rushing noise was heard by the surface workers issuing from the main adit. The foreman, Alexander Lang, believed this noise indicated that a train of skips had broken away and were rushing down the incline. He was horrified to see a quantity of smoke, dust, and chips ejected from the tunnel with considerable force. In a few seconds another but slighter puff of smoke and dust was discharged, and all was quiet. He and his fellow-workers at once concluded that an explosion had occurred, and with admirable coolness and presence of mind a man was despatched to the village to telegraph the accident to Mr. Ross, who had gone to a flower-show in the neighbouring town of Wollongong. The engine-man blew the whistle to apprise the villagers that an accident had occurred, while Lang and ——— prepared safety-lamps.

Before they entered the mine, a boy, who attended the horse that drew the empty skips to the foot of the incline, came running out of the tunnel, holding his head, and in a state of fright, stating that he had been knocked down by the rush of air. In a short time the horse walked out of the adit. It does not appear that any particular notice was taken of this horse at the time, but in the course of a day or so attention was directed to very slight indications of singeing of the hair on certain parts of this animal, the inference being that the horse was singed by the flame from the explosion. In disposing of this matter, to which much importance has been attached, the Commission draw attention to the circumstance that this horse and its attendant were within 80 yards of the adit mouth when the effects of the explosion passed them. No flames appeared at the tunnel mouth; no indication of direct flame was seen by the boy, or can be detected on the level road for fully half a mile. The boy's hair or skin was uninjured by flame. He saw none. Only localized patches of the horse were slightly affected; strange to say, a small portion near the root of the tail, and the long hair under its lower jaw.

The Commission, in the absence of direct proof of flame having issued from the tunnel, attach no importance to this circumstance. If flame had passed the horse the whole hair on the animal would have been affected; the boy could not have escaped. The marks on the horse may have been caused by contiguity to the

open

open lamp attached to the cap of its attendant when he released the tail-chain (or draw-chain), or when standing near the animal's head. Trivial and localized singeing, such as that described, is irreconcilable with a flame-charged atmosphere.

On entering the tunnel Lang and his comrade observed that the air-crossing near the entrance—and that conveyed the return air to the old furnace—was deranged. The thick planking had been forced upwards. They proceeded to the foot of the incline. The atmosphere was charged with dust, and the ventilating current had become deranged. While in this position they were joined by Scott and Hope, who, at the moment of the accident, were proceeding to their work in the night-shift in No. 1 heading. A man was dispatched to the Company's jetty for canvas. Finding the tunnel fallen, the men proceeded along the Slacky Road in order to regain the tunnel at B by the cross-cut A referred to. (See plan No. 4.) While proceeding along this road they met the overman White and the man Cavill hurrying outwards. These men had been at the moment of the explosion at point ◎ by prearrangement, endeavouring to communicate with the men who, from the western side, were making the new travelling-way, and had thus escaped. (*Vide* evidence of R. White.)

The news of the explosion having spread, managers and men from adjoining collieries, eager to render assistance, gradually assembled at the mine. When the first volunteers reached the tunnel by way of the cross-cut, within an hour after the accident, they found the ventilation in that road much deranged. The atmosphere was charged with smoke and dust and "after-damp." The temperature was somewhat high, but no steam was visible. The tunnel had fallen badly at this point. Passing over falls, they discovered two stoppings partially blown out or damaged. These were speedily repaired, when the ventilation steadily began to improve, and to take, though feebly, its natural course. On the arrival of Mr. Ross, he proceeded as far as the western junction (see plans), when, overcome by the after-damp, he was removed from the mine. Early in the evening, Lang, Richard White, the overman, and others, had, from the same causes, to be removed. A number of the men were also affected. No very concerted work appears to have been taken until 10 p.m., when a number of the managers of adjoining mines, seeing the desirability of concerted action, held a hurried consultation, arranged themselves as leaders of relays, and choosing search parties, the thorough work of penetrating the mine commenced.

Those who had first entered the mine came upon six (6) dead bodies lying on the flat close to the western junction. These they did not in any way touch; but discovering the western door blown away, and a very large fall completely blocking the tunnel, they tightened the stoppings, and closing the western door with canvas, commenced clearing off the top of the fall. This speedily improved the ventilation, and early on the following (Thursday) morning the search parties were enabled to cross this fall, and proceed along the tunnel to the Hill End section.

With the exception of a few falls, no serious damage was done to the tunnel beyond the falls near the Western Junction.

About 100 yards before arriving at the foot of Nos. 1 and 2 headings the bodies of two boys who had been engaged cleaning the road were found, and bore evidence of being blown about, and other marks of external violence.

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The witnesses examined by the Commission, and who had seen the bodies of the six men at the Western Junction, had either not examined these at all, or had done so in a perfunctory manner. They were totally unskilled, and unable to diagnose burns. Some of these witnesses were evidently led astray by the shortness of the hair upon, and the caked dust adhering to, the bodies. The surgeon, Dr. Llewellyn, who had carefully examined these bodies on removal from the mine, and who had had some experience of explosions, had removed from the Colony, but his evidence as given before the Coroner is clear and emphatic, and is reproduced in No. 7 Appendix. After an explosion the steam and heated vapour licks up the impalpable dust, and deposits this in cakes upon anything with which it comes in contact. The fibres of a bunch of token strings, picked up from a prop within a few yards of where the six bodies were found on the flat, although coated with soot, are perfectly untouched by flame; pieces or fibres of bark—extremely sensitive to fire—exhibit no traces of flame; woollen garments, picked up in that spot by the Commission, also show no traces of fire. The statement by Dr. Llewellyn, that the shreds of cuticle on the hands of one of these bodies had preserved its elasticity, shows that the body had been forced along the rough floor, but that the skin had been untouched by flame. The same remarks apply to the two bodies found on the main road referred to.

The positions where the bodies were found are marked by crosses and dots upon plan No. 5.

So little damage was done to the stoppings and doors that these being temporarily repaired with canvas the ventilation was restored, and enabled the whole of the bodies, with the exception of two, to be recovered within thirty-six hours after the explosion.

Attention is directed to the circumstance that, with two exceptions in the Hill End District—one in No. 7 bord, off No. 1 heading, and one in No. 8 bord, off No. 2—the whole of the bodies were found on the main roads. The majority were found with their heads lying towards the exit, and conveyed the impression that, alarmed by the explosion, they had been attempting to effect a hurried retreat, when they were overtaken by the deadly "after-damp," and fell as they ran, and died as they fell. The appearance of the body in No. 7 bord corroborated this view; when found one of his arms was inserted into the sleeve of his shirt, and the bulk of the garment over his head. The poor man had been choked by the after-damp while in the act of putting on his shirt, before following his neighbours. The awful suddenness of the death may be imagined from another body being found (at the opening to No. 2 bord, No. 1 heading) in the act of drinking out of a flask. No marks of burning were found on any of the bodies, with the exception probably of Westwood, who was found in the last stenton, between Nos. 1 and 2 headings, and probably one or two men in No. 2. The whole of the deaths were due, not to the direct effects of the flame of the explosion, but from the effects of after-damp (the result of the explosion), or the force or impact of the blast.

"After-damp" expresses the name given to the poisonous gases resulting from the explosion, *i.e.*, rapid decomposition of an (explosive) atmosphere consisting of certain proportions of air and fire-damp in some of its forms. It consists of varying proportions of carbonic acid gas (stytho-choke-damp), free nitrogen and watery vapour, in the form of steam, and, if coal-dust is distilled, probably a quantity of carbonic oxide gas (white-damp).

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In the case of marsh gas, the "after-damp" will, in all probability, contain a quantity of carbonic oxide, as a direct result of the explosion, in addition to free nitrogen.

As nothing had been disturbed in the mine (save covering the dead horses with quick-lime) from the date of the explosion till after the Commission had finished their various inspections, the appearances presented by the workings during the inspections of the Commission were essentially similar to those that were observed by the first search parties. These were as follows:—

1*st*, *Main Tunnel.*—This had fallen at intervals for a length of about 350 yards, beginning 170 yards from foot of the incline. Over this portion the bands under the conglomerate had sagged, or separated from the main roof, and were resting upon the heavy sets of timber that protected the main road. The outward rush of air probably displaced one or more of the main sets; and in its or their fall others were displaced, and the heavy blocks of stone that had rested on the displaced sets fell upon the hauling ropes. These ropes resisted the weight, and tearing off some of the hanging pulleys, a heavy diagonal pressure was thus suddenly brought to bear upon the adjoining timber. Unable to resist this weight, they would collapse from the centre towards each side. A minute examination of this large fall shows that the major portion of it must have come down subsequent to the blast. Portions of dust carefully removed from the pulleys at the bend (1), and from props towards the bank-head, show that it was uninjured by flame.

The Commission on various occasions examined this fall, and could observe nothing singular in its appearance, or differing from any other similar occurrence that is every day noticed in colliery workings, and nothing to arouse or excite suspicion. A close scrutiny of the surroundings at once reveals the cause.

Bank-head.—A set or train of fifteen empty skips have been somewhat broken and pitched off the rails. On this flat the bodies of six men were found, all of whom exhibited proofs of being blown about and subjected to much violence, their bones being fractured and their clothes torn. Some of the witnesses affirm these bodies were sadly scorched, while the evidence of Dr. Llewellyn proves the contrary. The Commission, after a close examination, could discover no traces of flame upon the back of the props, or pieces of woollen garments evidently torn off the men, while the strings of tokens hanging on a prop have not been affected by flame.

The Western Door.—The western door had been torn from its strong iron hinges and broken into pieces, the fragments being blown inwards. The force that did this damage manifestly came from the outside, and travelled inwards towards the Western District.

Large Fall.—The large fall inside the Western Junction on the main tunnel occurred, in the opinion of the Commission, immediately after the explosion, and was probably caused by the swift rush of compressed air removing a defective set of timber under a weak and broken part of the roof.

On the date of our inspections, 7th and 8th May, 17,000 and 20,790 cubic feet of air were passing over this fall.

The Trap-door between Nos. 1 and 2 headings was demolished, and shows that the direction of the force came from *in-bye* towards the mouth of the tunnel.

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The Trap-door in the diagonal road between Nos. 1 and 2 has been forced from No. 1 towards No. 2, and in the opposite direction to the other.

The Trap-door between 3 and 4 has been destroyed and blown inwards by a force proceeding from the mouth of the tunnel.

The Main Flat between Nos. 2 and 3 headings contained a full and empty train of skips. These skips have been acted upon by a sudden though not a great force; they have been bodily blown in-bye, and several have been lifted off the rails. Meeting with an obstacle at the end of this flat the empty skips became piled upon each other, and some old worn-out skips are smashed, and portions of the frame-work have been carried across the flat. Under the full skips the body of a boy was found entangled and very much mutilated, while close to No. 3 heading a man was found terribly smashed, with his clothes torn to shreds, probably from the force with which he was projected by the blast.

Almost opposite No. 2 heading a stopping with a door existed. This stopping was bodily blown in and levelled. Thirty yards down the return, and indicated upon the plan, a horse was found, and beyond it the bodies of four men. These had evidently been caught by the full force of the blast, and carried from the main tunnel through the stopping to the place indicated. The stoppings between the tunnel and the return were from this point inwards partially destroyed.

In the face of the Main Tunnel a skip which was being filled was slightly displaced, the front wheels only being carried over the rails.

Nos. 1 *and* 2 *Headings.*—At the moment of the accident a horse was evidently conveying a few skips through the door in this road. Overtaken by the blast, the horse was blown down to the tunnel, where it lay at our inspection, and the skips, slightly broken, were piled up partly in the diagonal road and partly in No. 2 heading. The stoppings opposite the two first bords off No. 1 are slightly displaced towards No. 1, the greatest force evidently coming from No. 2 heading. The three stoppings above this are partially displaced from No. 2 to No. 1.

Charring of Props.—The props in No. 3 bord and in No. 5 bord, No. 1 heading, are charred; portions of woollen clothing picked up in No. 5 were singed, and bore direct evidences of contact with flame. Quantities of coked dust were deposited as a cake on the props. Portions of this were fused into globules. The danger-board in No. 1 heading and its supports are partially charred. The horse that lay inside this signal was also singed, while a coil of fuse hanging a few yards from the face of No. 1 was unburnt, and a quantity of loose powder nearer to the face had not exploded. A safety-lamp, intact, but unlocked, was also found in this heading. An open lamp was found hanging on a support of the danger-board with the solder fused into globules; and beside Jer. Westwood a large copper lamp similar to that used by a deputy was found on the slack coal in the stenton. Evidently at the moment of the catastrophe no gas had existed contiguous to the face of this heading, hence no flame.

No. 2 *Heading.*—The danger-board was blown down at the stenton, and lies a few feet down the road. At the face a large *roll* was being crossed. About 3 feet of coal exists on the top of the roll. Gas issued from it. A few lumps of coal lay on the top, and a shot-hole could be felt in the face. The coal had evidently not been properly nicked or under-cut. A little gas was heard to issue from the vicinity,

if

if not from the shot-hole itself. The workmen engaged in fixing bratticing in this heading after operations were resumed found an open lamp on this roll, and sent it to the Commission on the —— of May. The oil on the outside of this lamp had not been touched by flame.

During the inspection by the Commission 13 yards of gas, tapering to 2 feet at the face, existed in No. 1 heading. In No. 2 heading 20 yards of gas existed. At the face this gas reached a depth of 3 feet 6 inches. The gas was remarkably sharp, instantly filling the lamp with flame even when the greatest care was observed. It reminded some of the Commission of silver gas (CH_4) met with in some fiery mines in Britain.

At the date of our inspection the ventilation was of course perfectly disorganised, and the following quantities of air circulated on the 8th of May:—

In the main tunnel, inside Western Junction, through last stenton, between Nos. 1 and 2 H, 2,160 cubic feet. Notwithstanding the deranged state of the ventilation, *no gas whatever* was detected *in any* of the bords off Nos. 1 and 2, *none* in the bords off 3 and 4, a trace only in No. 3 heading face, none in Nos. 5 and 6, and none in the western workings.

The bodies found in No. 2 heading were, so far as the Commission could discover, unscorched.

The props for three or four bords down this heading showed evidences of scorching contiguous to the roof. Between Nos. 5 and 4 bords no evidences of flame are visible in the main road, nor were some loose props disturbed. Cut-throughs connected Nos. 1 and 3 and 5 and 4 bords. Actual flame had travelled through these cut-throughs, charring the props. In No. 1 bord, opposite the cut-through connecting that bord with No. 2, a fierce fiery blast, probably due to accumulations of coal-dust, had kept charring the props, displacing some empty skips that were in the road, and depositing a thick layer of fused dust on the skips and props.

Western Section.

The return airways passed down the headings in (B) workings and across the dyke, and following the arrows passed over the Western Road.

The trap-door that separates this road from the return has been tilted up and jambed against the roof. *The planks of the air-crossing* have been broken down, destroying the crossings. A large fall of stone rests on the top of a train of skips contiguous to it.

The door-frame towards the face of the western tunnel is tilted inwards, while the door, smashed, lies —— yards on the out-bye side. No other damage was done to the workings in this section. The bodies of the victims were found on the main road, as if in the very act of effecting their escape.

Findings.

Your Commissioners, after repeated and minute examination of the district affected by the explosion, and having given due consideration to the evidence of witnesses of experience, skill, and erudition, have unanimously come to the following findings:—

Firstly.—That, in their opinion, the accident was caused by an explosion of marsh or of light carburetted hydrogen gas that had accumulated at the face (or between the face and the last stenton) of No. 2 heading in the Hill End district. The explosion was confined to this district, and there is no direct or indirect evidence of any other explosion having occurred elsewhere. *Secondly.*

Secondly.—That the immediate or exciting cause of the explosion was, in all probability, the flame from an overcharged shot that had apparently been fired by the man Westwood, or his mate, in the coal on the top of the "roll," in the face of No. 2 heading.

Thirdly.—That the explosion was intensified and the force increased and transmitted to distant parts of the district by the presence in the atmosphere of the mine of coal-dust in a minute state of division.

Fourthly.—That the person or persons to whom blame is attachable for this disastrous accident is the man Westwood, or his mate (both deceased), who at the moment were working at the face of No. 2 heading, and who prepared and fired the shot, which, in the opinion of the Commission, *was the immediate* or primary *cause of the explosion.* The Commission are, however, of opinion that the deputy, Robert Millward (deceased), Richard White, overman, and to a less extent (except in the matter of providing bratticing, for which he was alone responsible), Alexander Ross, manager, were guilty of contributory negligence.

The Commission are firmly convinced that the carelessness, want of skill, and the loose and perfunctory manner in which the principal operations in this mine were performed by the majority of the men, and countenanced by at least the overman and deputies, were intimately connected with, and led up to, the occurrence of the final catastrophe, whereby by the direct negligence of probably one man eighty other men lost their lives.

The circumstance that a shot had apparently just been fired in the face of No. 2 heading, where gas was issuing, and that this shot had not done the full amount of its duty (the coal had not been blown down to the bottom of the hole—the bottom portion of the drill could be felt)—that Westwood, the man who at the time worked in that heading, was found dead in the stenton, where he must have taken refuge,—is pretty conclusive proof that the shot had partially blown out or been overcharged, and that Westwood fired it.

In connection with these findings the Commission desire to make the following observations:—

The examinations of the mine convinced the Commissioners that the opinion as to the seat and course of the explosion expressed by some of the mine managers and others, such as Mr. Inspector Rowan and Mr. Inspector Dixon, Messrs. Jones, MacCabe, Evans, Green, and Williams (*vide* evidence) was a correct one.

In the course of the evidence opinions were expressed by several of the witnesses (none of whom had any direct experience of previous explosions) that distinct and separate magazines of gas had exploded in the old bord at A and B on plan No. 5, and that these increased the effects of the original explosion in No. 2 heading. These witnesses had evidently been puzzled to account for the different effects produced in various parts of the mine—of damage in the main flat and in the western workings, and almost no appearance of a blast in parts of No. 1 and No. 2 headings or in the Hill End return,—and had, without special investigation or careful examination, endeavoured to discover a cause by enunciating the above hypothesis. The untenable nature of these opinions was at once apparent to those who had intelligently examined the condition of the mine and the effects of the explosion. In the first place, the abandoned bords at A are off No. 1 heading, in which a very strong current of pure uncontaminated air circulated—one of the bords was stowed up (*i.e.*, filled full

of

of rubbish); the other was patent, but contained no gas. (See evidence of R. White, Question ——). None of the bords off No. 1 appear to have given off gas. Had this been the scene of a separate explosion from transmitted flame the stoppings opposite this bord (marked on plan) would have been demolished and blown into No. 2. On the contrary, they have been disturbed by a force in No. 2, which partially forced them into No. 1. There is no evidence of an explosion having taken place here—no charring of props—no deposition of charred dust or coke—while two delicate plumb-lines hanging from props in the main tunnel (adjacent) do not show the slightest sign of actual contact with flame. The same remarks apply to the bords at B. At no time did an explosive atmosphere pass these bords. They are ventilated by the return air, and being lower than the headings Nos. 1 and 2 they are unlikely places for gas to accumulate or lurk. These bords are partly stowed with rubbish. The stoppings in front of them are intact; there is nothing in the surroundings to lead to the suspicion of a separate explosion, or to warrant such an hypothesis. Considered in any aspect it is untenable, and the Commission are convinced that separate explosions, though possible under certain circumstances, did not occur here. On the other hand, however, the evidence that the explosion originated in the face of No. 2 heading is conclusive. Gas constantly issued from Nos. 1 and 2, and on two occasions immediately before the accident it was elicited in evidence that the quantity had increased. The Commission perceive a reason for this in the occurrence of the disturbances of the floor referred to (from which gas issued freely), and the distance that the face of the headings was before the current of air (28 yards) only five days before the catastrophe. Morgan, a wheeler, was requested by Scott, a miner of some experience, to raise his open lamp and hang it on the inside of the "danger-board" on No. 1 (this being a distinct violation of Mr. White's orders), for the purpose of giving more light to fill a skip that he was then loading from a bord he had commenced. The result was that a sheet of gas lurking near the roof lit and flamed backwards, but was soon extinguished. It does not appear, however, that this circumstance was reported to Mr. White.

The Commissioners are convinced from the evidence that the greatest recklessness, amounting to culpable negligence, was the characteristic feature of the system of working practised in this mine. The use of open lamps in bords off No. 2 heading, which were supplied by air fouled by gas from 1 and 2 headings, was undoubtedly an error of judgment.

The *orders* of Mr. Ross in respect to shot-firing were to some extent in accordance with the practice pursued in fiery mines, viz., that such firing should be done by deputy only. The circumstance that no deputy was appointed during the night-shift clearly shows that Mr. Ross must have been aware that this rule could not have been closely observed, nor does it appear that in the absence of a night deputy he engaged, or instructed, or paid, the special men then engaged driving these headings how or when to do so. So far as the Commissioners could ascertain, the shots were fired at any time during the shift; but it would have been a salutary precaution if, before shots were fired, the men had been withdrawn from the mine, and that no iron or steel tools had been used for charging the shots.

In this the Commission consider the management, especially that of Mr. White, censurable. The method of preparing shots in this colliery deserves the strongest condemnation. This has been proved by the deplorable sequel to long-

continued

continued indifference. We feel that it would be wise for the common safety to impose severe penalties on all engaged in underground operations in respect to this part of their duties.

The Commission were somewhat surprised to find that only in some cases, and this by the more thoughtful and skilful miners, was the coal thoroughly undercut and "nicked" preparatory to using explosives. This they consider should be made obligatory. They feel convinced that no experienced miners would attempt to work coal in the unworkmanlike manner that some of the men seem to have pursued.

An unfortunate practice has almost become general among miners in the Colony, viz., of blasting coal out of the solid instead of pursuing the more skilful method of thoroughly undercutting, nicking the sides, and perhaps of wedging down the mineral. The practice is known by the name of "Cousin Jack," and with advantage could be eradicated. In the present condition of Colonial coal-mining it would perhaps be impossible for an individual manager to prohibit the practice, but where gas exists it is clearly the bounden duty of any manager to risk a strike rather than permit such a pernicious and unworkmanlike custom to be pursued. As a consequence of failing to undercut and nick, the coal is likely to bear the strain of the powder longer than the stemming or tamping, the result being a "blown-out" or a partially blown-out shot. In this event a tongue of flame is ejected from the hole, which would be prolonged by the ignition of the small coal tamping. In event of gas being present in air where dust in minute divisions floated, a very serious explosion might by this means be the result. Indeed, in some of the most disastrous of recent explosions in Great Britain it is doubtful whether the most active agent was not coal dust alone.

Most disastrous effects have been observed where gas was not discovered before or after an explosion, and evidently due to a dust-laden atmosphere in a favourable condition for ignition.

The exact part that coal dust plays in an explosion has not as yet been clearly defined, but the following points have been ascertained:—

(*a*) The effects are in direct proportion to the state of division in which it occurs, and to its chemical composition.

(*b*) The effects are proportioned to its condition, and the condition as to dryness and temperature of the mine.

(*c*) In the presence of even an insignificant quantity of gas it very materially augments or increases the force and after-effects of an explosion. It increases the intensity and length of the flame, and may transmit flame and explode accumulations of gas in distant situations, although no gas existed between.

The scorching of organic substances and the production of coke and carbonic oxide and gases inimical to life after an explosion is very largely due to the presence of coal dust.

The Commission therefore feel that to the absence of proper precautions as to thoroughly nicking, undercutting, and preparing shots, and probably to an error in judgment in gauging the amount of the explosive, the loss of life at Bulli Colliery is to be attributed. It

It is difficult to believe that the general practice pursued of tamping shots with small coal, and of using patent fuse for conducting the fire to the explosive, could be unknown to at least the overman, Richard White. The equally dangerous and reprehensible practice of lighting touch-paper by tilting the flame of the safety-lamp against the protecting gauze must have been observed and known by that official, who, from his long experience in looking after the safety of men under his charge, ought at once to have caused the discontinuance of these practices. In this Mr. White is to blame, while the conduct of the men, some of whom were well aware of the extreme danger incurred, is viewed by the Commission as being extremely reprehensible.

It must also have been known to at least a section of the men that on more than one occasion the fuse attached to shots was lit by the flame of a lucifer match. For neglecting to report this reckless and dangerous circumstance some of the workmen have displayed a callous indifference for consequences that would seem to demand severe censure.

The coal dust found in Bulli Mine existed in the condition favourable for an explosion. The mine was dry and warm, and the dust abundant. (For analysis of this dust, *vide* Appendix 10.)

The Commission can excuse the officials and those engaged in the mine of knowing little of the danger arising from coal dust in the atmosphere of the mine, seeing that the subject has only of late years engaged the attention of the scientific bodies in Great Britain and Europe—indeed they would desire to commend the manager in his endeavour to rectify the evils of dust by watering the main roads. Had this practice been extended to the face and thoroughly done the probabilities are that the Colony would not have had to mourn the occurrence of a disaster unparalleled in the history of Colonial mining. They cannot, however, excuse either officials or the men for the perfunctory and dangerous practices narrated.

The Commission must on another subject express their opinion in words of rebuke. These headings had given off gas for over eighteen months, but no attempt was made to sweep the gas from the face by special means, such as are generally adopted in mines where gas is generated. The management, even when the ventilation was weak, did not direct the current to the face, but relied solely upon the stereotyped number of cut-throughs provided for in the Act. The consequence was that the air in the headings in advance of these passages was stagnant, and served as a permanent reservoir for gas. This was manifestly wrong, and betrayed great indifference or callousness for the safety of the workmen and the mine. The Commission believe that Mr. Ross had a sincere regard for safety, but that both he and Mr. White were lulled by the strong and ample ventilating current obtainable since the new furnace was started, and depended solely—and perhaps too much for security—on the strength of that current. But this is no reason or excuse for neglecting to use bratticing from the last stenton, and so remove the gas as it issued. Had this been done, the difficulty of placing cut-throughs on the top of "Rolls" would have been obviated, and no gas would, in all probability, ever have been seen.

The Commission are further of opinion that Mr. Ross issued instructions to his overman and deputies to lock all lamps; but that for some cause, and unknown to Mr. Ross, this order had not been strictly carried out for some weeks preceding the explosion. At the same time the Commission are fully aware how very difficult

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it is to get subordinates to carry out orders in their integrity. Some ill-feeling appears to have existed between a section of the men and the deputy, Millward, appointed after the resumption of work in February, 1887. The witnesses ——— ——— explained that on their resuming work, the deputy, in obedience (no doubt) to orders, locked their lamps, and on being asked where they were to get them relit, in event of their going out during their shift, Millward is *alleged* to have replied that he would leave the key at a certain point, as apparently had been the custom prior to the strike, and with the old deputy; but struck, evidently, with the absurd insecurity of the practice, Millward, remarking that they might as well have unlocked lamps as the means of unlocking them so near at hand, is alleged to have at once unlocked them. This, it may be remarked, applied to the special men working in the headings. The Commission have some hesitation in accepting these allegations in their entirety. The deputy referred to was lost in the explosion, and they feel that he alone could explain or meet these charges, yet they can see nothing in the circumstances of the practice pursued subsequent to the strike that differ from that prior to that occurrence. It was manifestly easier for the men to retire outside a danger-board, a few yards off, and there relight a lamp, than to retire to the main road, as was the practice before the new furnace was lit. Reducing their labour and inconvenience was surely no cause for complaint.

With respect to the locks on these lamps. The safety-lamps used were the old fashioned "Davy." The bottom or lamp screws into a brass ring supporting the gauze, and the *lock* is merely a small pinching pin or screw on the side that jambs into the thread of the screw attaching the gauze. This, however, affords no real security, as the end of a knife, a flattened nail, or almost any instrument is sufficient to undo the lock. Unless unscrewed (and no sane man would do so in the presence of gas) an unlocked is just as safe as a locked lamp, and if a man is determined to infringe the regulations the locking of this type of Davy lamp by officials offers no impediment. There is no evidence that immediately prior to the accident any safety-lamps had been unscrewed, and that this condition of the lamps in any way contributed to the accident. The unlocked condition of the lamps, however, constituted one of a long series of loose and unsatisfactory arrangements and conditions that, as has been remarked, led up to the loss of many valuable lives.

Two witnesses, Beckton and N. Hobbs, stated positively that a lamp issued to them wanted the top part of the gauze, that in short it was not a safety-lamp, and that they showed this to Deputy Crawford, who replied that he could not procure gauze. The Commission minutely investigated this serious charge. Deputy Crawford positively denied the statement, and neither Mr. Ross nor Mr. White ever heard of the circumstance. The witnesses (N. Hobbs and Wm. Beckton) did not favourably impress the Commission, who are inclined to place no importance on the statements of these men. This they believe *did not* occur. If, however, this had occurred, the men would have been guilty of infringing the 16th special rule by taking, or working with, such a lamp, and their having done so (endangering the lives of their fellow-workmen) should have been met with severe punishment.

The practice of permitting workmen to carry lucifer matches, and to use tobacco in a district where gas was given off and safety-lamps were used, is unusual, and is another link in an already long chain of lax discipline and loose and reprehensible practices. Such offences the Commission feel can only be put down by a stringent

stringent provision sanctioned by Parliament. The lives of all in such a mine are dependent upon individual actions, and it is outrageous to suppose that all men are alike careful, unless compelled by stern discipline and the certainty of summary punishment.

The Commission are surprised that in a mine where so little regard was paid to safety, and where men were permitted and did smoke, in the immediate vicinity and aware of the danger, that a serious accident did not occur from causes other than an overcharged shot.

Mr. Inspector Rowan appears to have visited the mine with regularity, and to have performed his examination in a thorough manner. His statements as to the quantity of gas seen during these inspections is most explicit, while his truthfulness cannot be impugned. His evidence certainly differs materially from that of the majority of the witnesses, but it perfectly corresponds to the statements in his reports. (See Appendix 6.) It seems to have been Mr. Rowan's custom in going through the mines under his charge to ask the men whether they desired to make any complaint. This is perhaps not a usual custom, or one to be commended in Inspectors, but it is certainly one that ought to bring under the Inspector's notice any condition of the mine which, in the opinion of the men, ought to be remedied. He *asked* the *men* in Bulli Colliery *whether they had any complaints to make. They had none.* In his various inspections he only observed *traces* of gas in these headings. It may be that during these visits the face of the headings were clear of "rolls," or they were not far in advance of the stentons, and if so, naturally the minimum amount of gas would be given off. It was clear to the Commission that Mr. Rowan had thorough reliance on the large amount of ventilation that was available, and that he disregarded the insignificant quantity of gas in the headings. He did not consider the effect of dust in event of an explosion, and for this he may be excused and exonerated. Mr. Rowan hearing no complaints from men (naturally ready to complain) was seemingly unaware of the reckless manner in which their various duties were performed. He does not appear to have suggested the use of brattice, probably because he did not suspect danger. Had such a suspicion occurred to him, the Commission feel that he would not have hesitated to have brought the necessity of bratticing before the Manager.

The evidence of several of the men—McKenna, Nicholson, Hobbs, and Beckton—went to show that for some time they were aware of danger, but that they believed that rule No. 6 of the Company's terms of engagement precluded them from reporting anything to the Manager. The Miners' Secretary, J. B. Nicholson, who had not been re-employed since the resumption of work in February last, made a remarkable statement, viz., "That he was informed of extreme danger existing for a fortnight before the accident, but had taken no action."

This person aims at being a leader and adviser of the men. One of his duties is to bring complaints before the management, and the Commission believe that in this he seldom failed in performing it. Not being employed by the Company, he certainly was not bound by rule 6; he, at all events, was free to complain. He knew of the dangerous state of the mine, and he believed it would end in disaster, and he did not even warn his fellow-labourers whose avocations led them daily into the mine, but permitted them to carry on their labours in blissful ignorance of their danger

danger. Rule 6 reads as follows :—"Any employee interfering in any way with the orders issued by the colliery manager or his overman for regulating the work of the mine shall be liable to dismissal without notice."

The rule is in exact consonance and in perfect harmony with the 18th special rule. By these the men were bound to report—they did not do so, neither did they report to the Inspector. It seems incredible that men could work, or permit others to work, under obvious conditions of danger and not take advantage of their privilege to report that danger. Rule 6, in plain English, repeats the words of the special rules, and, when read in connection with No. 5 rule, was evidently only intended to maintain strict discipline and the authority of the management. The Company declare by this rule that they would not permit any of their employees to interfere with the orders of their Manager. Nicholson informed the Commission that the men objected to this rule to the Company's secretary. On being pressed he admitted that the objection referred to the whole of these engagement rules. The Commission can readily understand how the secretary of a Union that wielded so much influence over men would object to rules that were intended to emancipate the Manager from the control of outside organisations or influences. They are unable to comprehend how intelligent men could permit themselves to be persuaded to display so much pusillanimity, and to pervert or torture the words "That any interference with the orders of the Manager" into meaning that they must not report danger, especially as they admitted that no orders had been issued by the Manager to the effect that men were *not* to report danger, and that they did not ask the Manager whether rule 6 would bear the interpretation given it by Nicholson and others.

In view of the circumstances that the rule was in accordance with the special rules, and that no Company's regulation could or did attempt to override the provisions of these rules, that no complaints were made to Mr. Rowan when he requested the men to do so, the Commission are of opinion that the men or Mr. Nicholson did not misinterpret rule 6, or were under any dubity as to its real meaning. Mr. Nicholson's conduct (who did not come under the operation of the rule), if he really did know of danger and took no steps to communicate with the Inspector, the Minister for Mines, or his late fellow-workmen, betrays an obliquity of character that they sincerely trust is uncommon in the Colony, and will meet with censure that it so deservedly merits.

The course taken by the explosion has been as follows :—

The gas exploded in No 2 heading inside the stenton, expanded, and with lightning speed passed downwards. Had it been pure gas, the probability is that the major portion would have shot through the stenton into No. 1 against the air, but the explosion being in all probability due partly to gas and partly to coal dust it split at the stenton—one portion passed into No. 1, licking up what gas lurked there, and rushed down the heading, shooting into each bord where expansion was possible. At No. 3 bord a portion left the heading, and passing into that bord ran against the current of air coming through the "cut-throughs," and again entered the heading. The portion that passed through the diagonal road wrecked the skips that at the moment were passing through, and destroyed the door. The portion that passed down No. 2 heading partly swept into No. 3 bord and through the cut-throughs to No. 1 bord, where its track is visible by the singed and charred props and deposits of coked dust on the skips and timber. Directed into No. 2, it joined the current from No. 1, and its intensity and vigour being increased thereby, it carried the horse attached

attached to the skips at the diagonal road down into the main flat, where it lay at the date of our inspection, and with redoubled energy forced four men and a horse at the time standing on the flat through a stopping and 30 yards into the main returns. The slight impediment offered by this frail stopping was sufficient to divide the current. A portion passed inwards, did some damage to the skips on the main flat, and killed a man and a boy, and expended itself at the face. The other portion rebounding back the main tunnel, forced some of the stoppings and knocked out the weaker sets of timber, permitting the superincumbent weight of rock that rested on them to fall on the strong hauling ropes, thus bringing great pressure to bear diagonally on the adjoining sets, which yielded to the weight and were drawn down in quick succession. On passing under the old air-crossing the compressed air forced the planking upwards, and produced the blast seen at the mouth of the adit.

The first belch of soot and rubbish from the tunnel probably indicated the effects of the explosion; the second and less forcible blast was most likely caused by the outside half of the fall in the main tunnel, while the fall of the inner half would have the effect of restoring the course of the ventilating current, and to send a blast of air back into the workings.

The Examiner of Coal-fields visited this mine on the 16th of March, but, although in the vicinity, did not inspect the Hill End district. He was informed by Mr. Rowan that he would probably observe no gas there, and this is quite in accordance with Mr. Rowan's statements and his official reports. The object of the Examiner's visit was not to inspect but to report upon a section of coal in the Western District leased by the Company from the Government. It is somewhat unfortunate that he did not thoroughly perform his mission by visiting the face of the main tunnel and Nos. 3 and 4 headings, which in some of the plans are shown within Government lands.

Mr. Mackenzie, at the last hour of the inquest, after he had thoroughly inspected the mine, gave his evidence, and enunciated an hypothesis as to the cause of the explosion.

Before giving his evidence to the Commission, Mr. Mackenzie again inspected the mine. This visit confirmed the views expressed by him at the inquest, and he endorsed that to the Commission. His views are given in his reports to the Department, dated 30th April, 1887, and his supplementary remarks to the Commission, and will be found in Appendix No. 8.

Briefly, Mr. Mackenzie contends that there were two explosions: The first originated about the bend of the main tunnel, which blew down the roof and caused the long fall on that roadway; and the second, and in consequence of the first, occurred at the face of No. 2 heading.

The Examiner bases his hypothesis upon the circumstance that from the central point, indicated E on plan, the props are lying in two directions, one section being inclined to the outside, and the other to the inside, and that the western door is driven 30 yards in-bye, and smashed from a force coming from the outside and that, in his opinion, the cause of that fall was an explosion of powder or dynamite.

The Commission, taking a comprehensive view of the accident, and the condition and state of the plant and the mine, fail to perceive the slightest grounds for this opinion of the Examiner.

Explosives, if successfully fired on a main road, might cause the destruction of one or two sets of timber, and so bring about the damage narrated, there being nothing to bind the sets of timber together; but the fracture or displacement of one or two sets by the passage of intensely compresed air would cause the same damage. The suggestion of explosives infers malice of no ordinary kind; it also means that they were placed there and fired in a busy road during the busiest period of the day. No one came out of the mine for at least one and a half hours before the accident, so that the culprit who intended to entomb scores of his fellow-workmen must have perished by his own act. There is nothing remarkable in the conditions of this fall; it differs in no way from other falls that may be seen every day in mines. There is no proof that it occurred anterior to the explosion, *because* the planks of the air-crossing were tilted up by the compression of air, that a violent force from within could alone cause.

The damage to the *western door* may have been caused by the fall; it is much more likely, however, to have been occasioned by the instantaneous expansion of the blast when rushing past this junction, or by the *recoil* that occurred, and that always occurs after an explosion.

Mr. Mackenzie considers that it is necessary for his hypothesis that the large fall inside the Western Junction should have occurred prior to the fall in the tunnel, and that this increased the pressure on the western door. He, however, does not state what caused this fall. An examination of it shows that it occurred after the explosion and the passage of the soot.

How the accident to the tunnel could cause the explosion in No. 2 heading is somewhat obscure.

A force travelling inwards with rapidity would impinge against the door in the main tunnel between Nos. 1 and 2 headings and force it inwards. The contrary is the case. It would then pass into the tunnel face with undiminished force. This, however, it did not do.

The Commission fail to discover cogent reasons to support this remarkable proposition of Mr. Mackenzie, or any circumstance that can justify the enunciation of such views.

The damage done to the plant in the mine is insignificant; greater damage is frequently occasioned by one of the ordinary accidents incidental to mining. It certainly bears no comparison to the great destruction of life. This, considered in connection with the position in which the bodies were found, clearly indicates that the direct effects of the explosion killed very few (if any), and that warning was given to the men who, with a common impulse, ran to the main road, and were there met by the poisonous gas resulting from the explosion and the distillation of dust, which instantly suffocated them while in the act of effecting their escape. The total annihilation of life was entirely due to the small area opened up and the contiguity of the men to the course of the blast. No wastes existed wherein the force of the explosion could expend itself, it being confined to the narrow strip of working where the men were actually engaged.

RECOMMENDATIONS.

1. The Commission consider that in all mines where gas exists the course of the air should be directed to sweep along the working-faces; in mines worked by Pillar and Stall, bratticing must be resorted to to carry the gas from the face as it issues, and so prevent any accumulation of explosive gases or of gases inimical to life. In cases where gas exists it would be better that no bords should be broken off the back or return heading or supplied with air fouled by dangerous gases. The panel system of working by confining and localising districts, or some modification thereof, might be pursued with advantage.

Of all known systems of mining, Longwall, by supplying a strong sweeping ventilation along the face of the workings, offers the best security to the miner. A modification of the Pillar and Stall (say the "wicket system") may, under certain circumstances and conditions, secure perfect ventilation of the face without the use of brattice (which is liable to injury), but it is very doubtful how far such modification could be permitted under the provisions of the present Coal Mines Regulation Act. This Act evidently only anticipated *one* system of mining.

2. Where safety-lamps are necessary—gas being present for (say) one month after being found in dangerous quantity—they should be securely locked by a man duly appointed, and tampering with them must be punishable by a simple and inexpensive process of law.

3. Where gas exists, and no provisions are made for its constant removal, no shots should be fired, and, where permitted in a gassy mine, shots should be fired only by a man specially appointed, and at such hours when the miners are not within the mine. All shots should be tamped by stone well damped, and only copper or wooden tools should be employed. As far as possible the use of explosives should be discouraged, and skilful mining encouraged. Danger-boards should be placed further from the faces from whence gas issues (say), where practicable, 50 yards.

4. Where safety-lamps are used, and the obligation is laid upon the men to cleanse the same, all examinations, tests, and repairs to these should be done by the owners.

5. Where safety-lamps are used the lock should be of such a character as to prevent any workman opening it. If the "Protector" type of lamp be employed the necessity for a lock is the less necessary, as the unscrewing of this type of lamp extinguishes the light.

6. The Commission would not insist upona barometer being provided at each mine. Experience has proved that this is a tardy index to atmospheric conditions. Serious changes in the atmospheric pressure occur, and are felt before they are indicated by a barometer.

7. A measure of safety may be found in the use of high explosives combined with wet tamping, or, still better, water cartridges, instead of powder under any of its modifications. Encouragement ought also to be given to the use of patent multiple wedges and appliances of a like nature, for supplanting the use of explosives. Under all circumstances and conditions some provision should be adopted for compelling workmen to thoroughly undercut, shear, or nick, and generally to work the coal as directed by the Manager.

8. Where dust exists in quantity, and under conditions favourable for ignition, it should be periodically and sufficiently damped by water.

9. In gassy mines the Manager should be specially competent, and one possessing a thorough knowledge of the principles and practice of mining, the properties of gases, and systems of ventilation; and, above all, he must be prudent and cautious, yet resolute, possessing sound judgment. He must have absolute and supreme control over the whole operations, and of the men within the mine, to maintain rigid discipline, and be perfectly free and untrammelled by any outside influences. The competency of a manager should be certified by an examination before a specially-appointed Board. The Commission consider that better results may be obtained if such examinations be oral, and probably assume a more practical form than those hitherto conducted in Great Britain for the same object.

10. The Commission do not approve of removing any responsibility from the management by increasing the power or number of the Inspectors. The visits of these officials should, so far as possible, be visits of surprise.

11. The Commission feel that the 4th clause in the present Act, relating to the spacing of cut-throughs, should be amended—to admit of any convenient or safe system of mining being pursued. This is a matter of detail that would be better out of the Act. The Commission would advise that the word should not occur at all, and that, if bratticing be used, or the air by some other satisfactory device be conveyed to the face, scope would be given to Managers to introduce systems of mining adapted to the circumstances of each particular coal-seam, with advantage to all concerned.

12. Complete sets of daily-report books should be provided, and kept in the mine or office, to be overlooked by the Inspector during his periodical visits.

13. Infringement of the regulations by either party should be followed by a summary form of justice, instituted before two Magistrates.

In conclusion, the Commission are well aware that no matter how stringent the regulations, or perfect the discipline, in a mine, or however strictly the industry may be fenced in by Acts of Parliament, accidents will happen.

Where gas exists the safety of the whole workmen is dependent upon the care and attention with which every individual deports himself. The lives of all hang on the actions of an individual, and the momentary carelessness of one may imperil the lives of those observing the regulations. It is impossible to suppose that men will not attempt to deviate from rules obviously necessary for the safe conduct of a mine. In such cases accidents must and will happen, which no Act of Parliament, skilful management, or human foresight can avert; but it is none the less necessary to frame regulations for the preservation of human life, and to maintain the observance of these, while strict and close discipline will certainly decrease the risk or number of accidents; and for this reason they should be rigidly enforced. Harmony and a community of feeling on the part of and between employers and employed would materially contribute towards this end.

The investigation of the accident at Bulli Colliery, with the object of ascertaining the cause of the deplorable loss of life that occurred, has convinced the Commissioners that the accident was due to lax discipline and reckless indifference on the part of the men and colliery officials that they were not prepared to discover

in a mine so long known and so high in popular estimation. They have endeavoured to expose the salient features of the points that require remedy, and that undoubtedly led up to the accident. This duty they have performed with much regret, and have expressed it fairly and dispassionately, yet fearlessly. They hope that the deplorable accident that necessitated this Inquiry, and the unworkmanlike and unsatisfactory practices that it has been their painful duty to expose in this report, will show the necessity to all engaged in mining pursuits and prove an incentive to mine managers to introduce at once precise and workmanlike systems of mining and of thoughtful regulations calculated to protect life and property, and to maintain these by strict and inflexible discipline. The Commission feel assured that, by closely observing good discipline and by pursuing correct and precise systems of mining, especially if backed up and aided by the hearty co-operation of the more thoughtful employees, disasters similar to that just investigated will, under the favourable conditions existing in this Colony, be rare, if not altogether averted.

JAMES R. M. ROBERTSON.
J. Y. NEILSON.
JOSEPH HILTON.
THOMAS CROUDACE, M.E.
JOHN OWENS.
JOHN JONES.
GEORGE O'MALLEY CLARKE.

Witness—AUGUSTUS VIALOUX.

Sydney, 12th July, 1887.

BULLI COLLIERY COMMISSION.

MINUTES OF EVIDENCE.

TUESDAY, 10 *MAY*, 1887.

Present:—

DR. ROBERTSON, M.D., F.G.S., C.E., PRESIDENT.

MR. G. O'MALLEY CLARKE, S.M.,
MR. NEILSON,
MR. J. OWENS,
MR. CROUDACE,
MR. J. JONES,
MR. J. HILTON.

Alexander Lang sworn and examined:—

Mr. A. Lang. 10 May, 1887.

1. *President.*] What is your occupation? I was weighman and screen overseer at the Bulli Colliery.
2. How long have you been employed at the Bulli Colliery? About seven or eight years I think.
3. Have you been employed during that time in the same capacity? Yes, I think I have been since they commenced to earn the coal.
4. Are your conversant with the internal workings of the mine? No, I cannot say I am.
5. Your duties have not called you into the mine? No; that is, very seldom.
6. Where were you at the date of the accident? I was outside then.
7. Do you recollect the day on which it occurred, and the time? It was about half-past 2 o'clock on Wednesday, the 23rd of March.
8. Where were you at the time? I expect I would be about 7 or 8 yards from the tunnel mouth.
9. How were you apprised of the accident? By the quantity of stuff coming out of the tunnel—a rush of vapour, carrying dust and chips, as if there had been a fall which caused a sudden rush of air.
10. Did it come out with some force? Yes.
11. How far did it drive the chips and dust you speak of? About 7 or 8 yards I think.
12. Did that recur? Yes, there were two of them, the second coming with less force.
13. What interval was there between the two? It was a matter of seconds; I think, perhaps fifteen or sixteen seconds.
14. Then after the first burst or discharge of rubbish, did you remark any return of the air or recoil? No, sir.
15. There were simply two discharges? Yes.
16. Did it make any noise? Yes.
17. In what way? The way I would describe it would be that a set of skips had come away from Hill End. That was my impression at the time.
18. Then the report was loud and distinct? Yes.
19. What occurred to you when you observed that? Well, after I saw it I got out of the way for fear a set of skips should come out.
20. Did you apprehend any danger? Not unless the tubs ran out.
21. When you saw the chips and rubbish forced out of the tunnel mouth as by a blast, did it not occur to you that an accident of a serious nature had happened? No, not until I had found that no tubs were coming out after it.
22. What proceeding did you take then—what did you do? I went to the tunnel mouth with my mate and saw a lad coming out. It was Herbert Cope, and he was calling for his mother.
23. What were his duties in the mine? He was a driver from the bottom of the Hill End incline.
24. Then what did you do after that—did this lad apprise you of the accident? No, I do not know what he was saying; he was in a very excited state. When we got him away two or three men got ready to go inside the mine.
25. Did you observe whether he was injured in any way? I believe he was injured; he could hardly walk and was staggering about.
26. Was that from fright or personal injury? From personal injury I should say.
27. Did you question him on the subject? No; but when I took him into the office he seemed to get worse, and blood came from his mouth; I thought he would not live.
28. He had been knocked down apparently? Yes.
29. What men came to your assistance? M'Dowell came first and helped me to carry the lad in. Then Hope and Scott and other miners came; also Mr. John Chalmers, the engineer.
30. Then yourself, Mr. Chalmers, Hope, and Scott proceeded into the mine, I suppose? Yes; Hope and Scott went first, and, as soon as we got the lamps, we went in with them.
31. Was it you who apprised them of the accident? No; I do not know who it was. They were going to work at the time and found that there was something wrong.
32. Very well; give us your own story as to what you did after you entered the mine? After we entered the mine the first thing I came across was some slabs of the overcast near the mouth of the tunnel, and when we got within some distance from the bottom of the Hill End incline we could not get any further on account of the bad air.
33. Did you notice any falls? No, we did not come to any serious falls then.
34. How far did you go in? We went in over 300 yards at first, and found some stoppings blown out. We put those stoppings up and then got to a fall which prevented us from proceeding further. It appears now that the distance to the fall is 375 yards. Then we came back again and went up the slacky road.

[Witness here describes the road on the plan. The slacky road is a road that diverges to the bottom of the incline towards the left.]

35. Then you made your way from this road up to the incline again? Yes.
36. And when you got to the incline, what did you observe? On the Hill End incline the road was all fallen; and having got a short distance, we had to return again, as the air was bad, and the stone was coming down freely.

Mr. A. Lang. 10 May, 1887.

37. What was the condition of the ventilation at that point? There was very little ventilation up there at that time.
38. Then you came back to the slacky road? Yes; and we met two lads coming out with a horse.
39. Where were they coming from? They were coming from the grip section.
40. The grip section is a district to the left? Yes; up that road past the furnace.
41. Did you have any conversation with those lads? Very little. They wanted to know what had happened. We did not know, but told them to put out their lights and go out. We went a little further and met Mr. White, the overman, and a man named Cavill. That was before we came to the road that joins the slacky road to the tunnel.
42. Had White any conception of what had happened? Well, he knew that something had happened.
43. Did you tell him what had happened at Hill End? No. He was carrying a naked light at the time, and we thought it would be better to put the light out. We were carrying a Davy lamp. The air was taking its course along the slacky road. White said there was no danger there; but the men were not satisfied to go further with the naked light, and he went out. Hope, Scott, Mr. Chalmers, and myself went across to the Hill End road.
44. On reaching the main tunnel, or Hill End incline, had the ventilation improved? No. There was not much ventilation there; in fact there was very little after we got into the Hill End. It was owing to this that we made such slow progress. After going a short distance we could scarcely breathe at all. I had not gone much further when some other men came in; and as I did not feel well they advised me to go out, which I did.
45. When did you again enter the mine? Not until it was all over. I felt ill after I got out, and was not able to re-enter the pit.
46. Did you know of the existence of gas in the mine before the accident—I refer to what is known as fire-damp? Yes, I believed there was gas there.
47. How long had you been aware of the existence of gas in the mine? It was not till after the strike that I knew it of my own personal knowledge.
48. How did you become aware of it then? I saw it when I went in with Mr. White on one occasion.
49. In what part was this? In the gassy section—that is the Hill End.
50. The Hill End is known as the gassy section? Yes.
51. In what part of the Hill End did you see the gas? It was either in No. 1 or No. 2 heading, but I believe it was in No. 2.
52. I suppose you are aware that Davy lamps have been used for some time by a section of the men at Bulli? Yes.
53. Do you know how long they have been in use? I cannot say how long, but I know that they have been used in the gassy section since it was opened out.
54. That was some time before the strike? Yes.
55. Who used to clean and light the lamps? A man named Metcalf did before the strike.
56. To whom was that duty delegated after the strike? I do not know that there was anyone.
57. Was no one appointed to that duty after the strike? Not to my knowledge.
58. Then is that all you know about the accident? That is all.
59. *Mr. Neilson.*] Can you give us any idea as to the proportion of the second explosion as compared with the first? The second one you say was not so strong. Was it one-half the strength or one-fourth? I do not think it would be one-fourth as strong.
60. Then the first was much the stronger? Yes; a great deal.
61. Did you notice any smoke coming out of the tunnel? No; there was no appearance of smoke, only dust and chips.
62. Did you notice whether the air was hot at the tunnel mouth as you entered? It did not seem very hot there; but was very sharp after we got some distance from the tunnel mouth.
63. Did you not notice any peculiar smell after these discharges from the tunnel mouth? No.
64. *Mr. Clarke.*] Can you say what interval elapsed between these two falls or explosions? I should say fifteen or sixteen seconds.
65. When you went in after the strike with White, was it by his invitation? Yes. It was a few days after the commencement of the strike—a matter of seven or eight days after the men had gone out.
66. *Mr. Neilson.*] That was before the new furnace was going? Yes.
67. *Mr. Clarke.*] Mr. White looked for the gas, to test it? Yes.
68. Did you see much or little there? I could not say what quantity.
69. *Mr. Owens.*] Do I understand that you saw nothing but dust and chips when the explosion took place—no flames? No.
70. When you examined the mine with Mr. White was he aware of the presence of gas? Yes.
71. He tried for it himself? Yes.
72. *Mr. Jones.*] In what particular bords did you find gas? Only in No. 1 heading. I think it was a very slight quantity, and a little in No. 2 heading. But I would not be certain about the headings.
73. *Mr. Owens.*] But you found the gas only in the two headings? Yes; and very little in one of them.
74. *Mr. Hilton.*] Previous to this occasion when you went in with Mr. White, how long was it since you visited the mine? I cannot tell you.
75. Approximately? Well, it might be six or seven months. I was up there once with Mr. Ross, when he was surveying. I was employed outside the pit. I did not go inside unless some accident happened on the road.
76. Had Mr. White any particular desire for you to accompany him on that occasion? No; I do not remember how the matter came up. He asked me to go in with him. I do not think I would have gone in unless he spoke to me about it.
77. Did you see any brattice fixed in the headings to carry the ventilation to the working places? No.
78. *Mr. Croudace.*] You say that when you went into the mine immediately after the explosion you came across a fall? Yes.
79. And that you went round the slacky road to the other end of the platform? Yes.
80. Have you been into the mine since and seen the same fall? Yes.
81. So that what is now known as the large fall is the same as that which you saw upon first entering the mine? Yes.

Mr. A. Lang. 10 May, 1887.

82. Did you hear any rumour about a man having been blown some distance on a coal heap? Yes.
83. Did you believe that? No.
84. Is there any coal heap immediately opposite the tunnel that he could be thrown on? There is a dirt heap there, below the level of the tunnel. There was a man in front of the tunnel—about 7 or 8 yards away, when this stuff came out. It was on the 4-foot road. He was carrying sleepers to the tunnel to send them in to the men. He was facing the blast, and it got into his eyes, but did not hurt him.
85. What is the man's name? Henry Bokey.
86. Is he employed at the mine now? No.
87. Can you tell us where he is? No.
88. Have you any idea of his whereabouts? No. I think he went back to Sydney.
89. You are positive as to the want of force? Yes.
90. Did you ask him to go inside the mine with you? No.
91. Why not? Well, his eyes were bad I thought, and I did not ask him. Besides, we had not lamps sufficient, as far as I could see.
92. Was that the only reason—what was the reason you did not ask him to go into the mine with you? I had no reason. Those that went in were volunteers.
93. Do you know why he did not go in? No, except that he was complaining of his eyes.
94. Have you any knowledge whatever of the conduct of a mine? I have some knowledge of getting coal. I have been fourteen or fifteen years at it.
95. Did a horse come out about the same time that the boy came out of the tunnel? No. The horse was brought out by the horse-keeper afterwards.
96. How long after? About two hours and a half.
97. Did you see the horse? Yes, I saw him that night.
98. Was there any sign of burning on him? Yes, there were signs of singeing on the tail and mane.
99. Was it on the hair of the mane and tail only, or on the rump? There seemed to be slight singeing on the tail and rump, and the mane was slightly singed.
100. *President.*] Can you account for the horse only being singed on those two isolated spots? No, I did not examine him very closely.
101. What occurred to you as to the cause when you saw the marks of singeing on the tail and mane? Well, I saw that there had been a considerable deal of heat there if nothing else.
102. Heat being present, did you consider as to whether you would have expected other parts of the horse to be singed? No, I did not think much about it.
103. Supposing that the horse was surrounded by heated atmosphere, would you consider it likely that the heat would be centralised in two spots, or be distributed over the whole body of the horse? I did not examine it particularly, nor did I think much about it at all.
104. Was the horse severely singed? Not very severely. The hair was curled, as it were.
105. Was it burned and charred over a large space? As I have already said, I did not examine the horse closely for any burning. I just noticed what I have told you.
106. Then the horse was not otherwise injured? No.
107. *Mr. Jones.*] Was not the horse standing on the road leading to the grip at the time of the explosion? I do not know.
108. Where ought the horse to stand? It should stand on the grip road.
109. Would not that partially account for the burning being confined to particular spots, with a full blast coming out of the main tunnel? Yes, it might.
110. Having a knowledge that gas existed in the mine, were you much surprised when you saw the first blast—did you readily perceive what had happened? Well, not at first. My second impression was that something had happened.
111. You say that in going round to get above the fall you met White, the overman? Yes.
112. And one of you advised him to put out his light? Yes, one of the four of us.
113. Did he put out his light? I do not think he did. He went directly out.
114. *Mr. Clarke.*] Who was in charge of the horse you refer to? The lad Herbert Cope.
115. Did he show any symptoms of burning? No, none.
116. How far in the tunnel was he when you came across him? Not in the tunnel at all, he was outside.
117. Do you know how long afterwards it was when the horse was brought out? I should say about an hour or so.
118. *President.*] You say you saw no flame issue from the tunnel? No.
119. *Mr. Jones.*] Are you quite sure that the singeing upon the horse was the result of flame? No; I am not.
120. What do you suppose caused it? I do not suppose anything about it. I am quite sure as to the singeing, but there was no burning of the flesh.
121. *Mr. Clarke.*] Was the singeing confined to the tail, or did it extend further? It was singed from the buttock up to the mane.
122. *Mr. Jones.*] On which side of the horse did you observe the singeing? I believe it was on the near side, but I did not see the horse till he was outside.
123. *Mr. Hilton.*] Can you say whether you went as far as the western junction when you went into the mine? I did not go as far. I think I went about half way up the incline. [*The witness withdrew.*]

John Chalmers sworn and examined:—

Mr. J. Chalmers. 10 May, 1887.

124. *President.*] What are you by profession, Mr. Chalmers? I am engineer for the Bulli Coal-mining Company.
125. Would your duties lead you into the mine? Yes, occasionally.
126. Are you conversant with the workings of the colliery? Only so far as the main roads are concerned. I have been in the other places occasionally, but very seldom.
127. What took you off the main roads to examine those places? Curiosity, I suppose.
128. Then it was not your duty? No.
129. When were you apprized of this accident at the colliery? Shortly after it happened.
130. About what time would that be? About twenty-five minutes to 3 o'clock.

131.

Mr. J. Chalmers. 10 May, 1887.

131. Where were you at the time? I was on the road between the pit and the township. The first I knew of it was when the engine-driver blew the whistle, when I turned back and met some men coming down who told me that the pit had blown up.
132. Who was it told you? Thomas Bissell.
133. How was he employed about the mine? He was a spare engine-driver.
134. And he had been up in the mine at the time? Yes.
135. He told you that the mine had blown up, and you then returned. What did you do when you reached the mine? I went to the tunnel mouth, and several men there told me they supposed the mine had blown up.
136. Did they state to you what they had seen? Yes.
137. And what was the story they narrated to you? They told me that there had been a great rush of wind, and a boy had come out of the tunnel mouth.
138. Did you see the boy? Yes; I saw him through the window of the cabin to which he had been taken.
139. Did he appear to be injured? Yes.
140. Did you notice in what way? No.
141. Then what did you do, Mr. Chalmers? I told one of the men to get some safety-lamps and canvas, and I then went inside with Lang, and found that Hope and Scott, who had preceded us, had penetrated 50 yards or so into the mine. We found that the overcast was blown up, and a man was put on to fix that whilst we proceeded further in. We found a stopping blown out on the right-hand side further up going in. We fixed that up as far as we could with stone and rubbish, and a few yards further in we were stopped by a fall. That was about 300 yards up. We turned back, and having seen that the overcast was put right, we went up the slacky road, by which means we reached the main tunnel.
142. What was the condition of the main tunnel at the time? There was a lot of timber lying about, and the air was very bad.
143. Did you hear many falls? No, we did not hear many falls; but it was working in many places.
144. Then there was considerable damage done in several places? Yes.
145. What did you do next? We went up, following the air as far as we could, and found another stopping out, about 800 yards from the tunnel mouth.
146. Was Lang still with you? No; he had turned back not long before that. There were three of us, and some others were coming up.
147. What were their names? There were M'Kenna, Richards, and some others, whose names I do not know.
148. Having reached a point about 200 yards from the tunnel mouth you found a stopping blown out, did you put that stopping right? Yes. That was a stopping on the left-hand side. I went for some canvas for it, but in the meantime some other men came in and put up the stopping. We afterwards came in and put a stopping in the mouth of the western.
149. How long after the accident was that? About two hours and a half, I should say.
150. By the time you reached the western did you find the ventilation restored? Yes; it kept getting better all the time.
151. Was it very hot in the main tunnel? Not very hot.
152. Did you notice any steam? No; I cannot say that I did.
153. Was the air bad? Yes; it was very bad. We could hardly see anything at first.

[NOTE.—The witness here refers to the plan and indicates the road that the party took to reach the main tunnel; and also points to the stopping that was blown down on the left-hand side.]

154. Then you got to the western junction about two or three hours after the accident? Yes; I believe we did.
155. Before reaching that point did you see any bodies? Yes; I saw about three or four.
156. Where were they lying? They were lying between the western and the flat.
157. Did you particularly examine the bodies? No; I did not examine them at all.
158. What did you do, then? We went outside again.
159. And when did you return to the mine? On the Saturday.
160. Did you see, or observe, the horse that the boy Cope had? No; I did not see the horse at all.
161. After you came out did you see the horse? Yes; I saw it in the stable that night.
162. Why did you visit the stable—were you in the habit of doing so? No; I was given to understand that there was a horse in the stable singed.
163. Well, in what condition did you find the horse? Its tail appeared to be singed.
164. Was it singed to a great extent or only slightly? It was slightly singed, just on the top of the tail.
165. Was the singeing circumscribed or diffused—was it confined to a small area of the horse's body? It would cover about 6 or 8 inches. Only the hair was singed.
166. Was it completely or only partially charred? I did not examine it that closely.
167. Did you notice the horse's mane? No.
168. You saw it was not injured to any great extent? Yes; I did not think it was injured much.
169. Did you account to your own satisfaction for the singeing? I did not try to account for it.
170. You state that your duties led you frequently into the mine? Yes.
171. And that your duties terminated at the main road? Yes.
172. But, that out of curiosity, you had visited the workings on several occasions. Do you recollect any particular districts that you visited out of curiosity? Yes, I was in the first bord, off No. 3 heading, before the explosion.
173. Had you ever been up No. 1 or No. 2 headings? I do not think I had been up them; I have been up No. 1 heading, but not far.
174. Did the men work with safety-lamps? I understood that safety-lamps were used.
175. Were you aware of the existence of gas in that district? By report, yes.
176. Not from personal observation? No.
177. Do you know whether the lamps were regularly locked? I do not know anything about the lamps; I never used one of them.

Mr. J. Chalmers. 10 May, 1887.

178. *Mr. Neilson.*] Have you extended the engine plan latterly? Yes; we started the engine to run 300 yards per minute before the explosion.

[NOTE.—Witness describes on the plan the manner in which certain roads were diverted.]

179. The alterations made did not interfere with any doors or stoppings? No; we only put a tail rope through the door alongside the wall. That is all we did so far as the ventilation was concerned.

180. *Mr. Hilton.*] You know the door at the western junction? Yes; it is a door with two regulating slides to it.

181. Was that door subject to frequent openings? Only when anyone passed through, or when an engine set was running?

182. *Mr. Owens.*] You know that big fall on the right-hand side about 300 yards from the tunnel mouth? Yes.

183. Was that there when you first entered the tunnel mouth after the explosion? Yes.

184. You have been there since? Yes; there is some of it cleared away now.

185. *Mr. Jones.*] Did you carefully examine that horse? No.

186. You cannot say that there were no other burns upon it than those you have spoken of? No.

187. *Mr. Clarke.*] Did you come in contact with the men working in the gassy section at any time? I used to see the wheelers; at times I would come in contact with them.

188. Did you ever hear any rumours as to the presence of gas in dangerous quantities in that section? No; and if I had thought it was so, I would not have been there.

189. Did you ever hear any statement to that effect, or any complaint or expression of fear, with regard to gas in the mine? No.

190. Then you never heard any rumour of imminent danger? No. [*The witness withdrew*].

Herbert Cope sworn and examined:—

Mr. H. Cope. 10 May, 1887.

191. *President.*] What is your occupation? I am a wheeler engaged at the Bulli Colliery.

192. You were engaged driving a horse there? Yes. I used to drive a horse from the bottom of the incline to the tunnel mouth.

193. Were you on Wednesday—the day of the accident—at the Bulli Colliery? I was inside the mine.

194. At what point were you? I was just about half way in between the tunnel and the end of the flat.

195. The end of the flat terminates at the overcast, does it not? Yes. I was not so far in as that.

196. You would go from the tunnel to the overcast? Yes.

197. What were you doing at the time of the accident? I was following a full set of skips out.

198. Well, what did you experience—what did you feel? I did not feel anything, I heard the ropes shake first.

199. Yes, and what occurred after that? I do not remember anything else, except being knocked down.

200. Where were you knocked down? I was pushed up against a prop.

201. Were you considerably hurt? No, I was not very much hurt.

202. And you do not recollect what occurred after you were knocked down? No.

203. Did you see any flame? I saw what was similar to flame.

204. What was that? Well I cannot say whether it was flame or not.

205. Or whether it was the violence with which you were dashed against the prop? Yes. I cannot say.

206. Did you see any smoke? Yes, I saw it in front of me.

207. And a rush of dust and rubbish? Yes.

208. Then you picked yourself up and came out? Yes, and I passed the horse, which was standing in the grip road.

209. You were between the junction of the grip road and the overcast? Yes.

210. Did you notice whether the horse was injured when you passed him? I did not see the horse when I passed him. The horse was standing in the grip road in order to let the full trucks pass.

211. Then you simply picked yourself up and ran out to daylight? Yes.

212. Have you worked inside the mine? Yes.

213. In what part? In the western.

214. How long ago was that? A few months before the strike.

215. Did you wheel into the face of No. 1 or No. 2 headings, or No. 3 or No. 4 headings, or where? No; I used to be acting as trapper.

216. Were you ever in the workings of the Hill End district? No.

217. Were you aware of the presence of gas in that district? No; but I have heard of it.

218. Do you recollect the condition of the air in the tunnel when you were making your way out? No.

219. That is, further than what you have described as to the smoke and dust? Yes; that is all I noticed.

220. Do you recollect a rush of wind coming before you were knocked down? No.

221. Then you do not know what force knocked you down? No.

222. *Mr. Neilson.*] Did you notice whether the smoke felt hot? Yes, it did.

223. *Mr. Hilton.*] Did you hear any noises at all? No; I just heard the rope shake.

224. *Mr. Owens.*] Were you affected by any excessive heat? No.

225. And you would not be sure whether you saw any fire or blaze? No.

226. *Mr. Jones.*] Did you see the horse after you recovered? Yes.

227. To what extent was it burnt? Its head was a little singed round the mouth.

228. Was any other part burnt? The tail was a little singed also.

229. Was it on the side near the main tunnel? Yes.

230. And the horse was facing the mouth of the tunnel? Yes.

231. *President.*] Can you account for the horse only being singed on the head and tail? No.

232. Did you use an ordinary miner's lamp? I used a flaming lamp.

233. Are you sure the horse did not receive those singes from the flame of your lamp? Yes, I am.

234. Did you ever take off the tail chain of the horse? Yes.

235. Could not an accident in connection with that proceeding account for the singeing under the chin and the tail? No; I think not.

Mr. H. Cope. 10 May, 1887.

236. *Mr. Jones.*] You would be naturally confused at the time of the accident? Yes.
237. And you saw no fire you say? No.
238. *Mr. Croudace.*] Did you notice whether the horse was burnt prior to the accident? No.
239. And you could not say whether it was burnt before or not? No.
240. You are quite sure the horse was standing with its head to the tunnel mouth? Yes; at least that is the way I left it.
241. Was there any singeing upon the horse other than you have described? I noticed some on the tail and some on the mane. That was all. [*The witness withdrew.*]

Wm. Scott sworn and examined:—

Mr. Wm. Scott. 10 May, 1887.

242. *President.*] What is your occupation? I am a miner, engaged at Bulli.
243. How long have you been a miner? About 18 years.
244. Where have you been principally engaged? In the north of England.
245. In what part of the north of England? In the county of Durham, near Newcastle.
246. Have you ever worked in mines where there was fire-damp? A little; not much.
247. Did you ever work with Davy lamps in Durham? Yes.
248. You are conversant with the rules and regulations applying to fiery collieries? I was not very much in fiery mines.
249. How long were you engaged at the Bulli Colliery? I was engaged there five weeks before the strike.
250. And since the strike how long? I worked there about a fortnight after the strike.
251. Were you employed at the colliery at the time of the accident? Yes.
252. Where were you employed—in what part of the colliery? In No. 1 heading.
253. That was in the Hill End district? Yes.
254. Were you on the day shift or the night shift? I was on the night shift.
255. What time did you commence work on the night shift? Generally about 4 o'clock.
256. We understand that you were proceeding to the mine when the accident occurred? I was just putting my clothes on at the time.
257. Who told you of the accident? We heard the report of it.
258. What was the nature of the noise you heard? I thought it was a tree falling at first. My mates said they thought it was that. We asked some men who were passing, and we then heard of the explosion.
259. What did you do then? We got lamps and went into the tunnel mouth.
260. What condition was the tunnel mouth in—was it full of dust and smoke? Well, it was taking the air when we got there—it was going back again, you know.
261. Was Hope with you? Yes.
262. You got safety-lamps before proceeding into the tunnel. How far did you go? Well, I cannot say exactly the distance. We went just over the siding points.
263. These siding points do you mean, down to the grip? No, beyond that, on the main tunnel, at the foot of the incline.
264. Before you come there, is there an overcast? Yes.
265. Did you observe anything peculiar about that? No. We could see very little at that time when we went in with the Davy lamps.
266. Was the air hot? Yes, rather hot.
267. Was after-damp present—could you detect it? No; I could not say so.
268. Did you think the peculiar atmosphere could be accounted for by the state of the ventilation at the time? It was very like after-damp.
269. Could you smell it? Yes.
270. Then, having got as far as the foot of the incline, what occurred then? Well, we stood looking round for a time. There was some timber knocked about there; and presently we saw two lights coming along. It was Chalmers and Lang. We then went up further till we came to a fall, which we could not get over. We filled up a stopping just there which had been blown out on the right-hand side as you go in.
271. Was that fall of sufficient size to account for the interruption to the ventilation? It would doubtless stop the air a good deal.
272. On reaching this fall and finding that you could not get over it, what did you do? I think I asked Chalmers if there was no other road up. He said there was, referring to the slacky road, and we returned and went up that road.
273. That is the road leading down to what is known as the grip section? Yes.
274. Then you proceeded along that heading, turned off to the right, and along the horse road? Yes; and got to the tunnel further in.
275. Were there any falls there—at that point? Yes, there were falls there.
276. Were they sufficient to bar your progress? No; we got over them.
277. How far did you proceed? I should say about half-way between the top of the incline and where the skips meet.
278. What did you observe at that point? I noticed a stopping blown out on the left-hand side.
279. Did you repair the stopping? No; we returned for the purpose of getting the material to repair it.
280. Did you pay any attention to the state of the ventilation at this time—was it getting better? Yes, it was getting better as we proceeded inwards as I have said; but after reaching this point we could not get any further.
281. Then you returned to the outside? Yes.
282. Did you again go into the workings? Yes.
283. When did you enter the workings again? It was not long after we came out, I could not say exactly how long.
284. Did you repair the stopping? No. The stopping was repaired in the interval by some others. We then entered the western.

Mr. Wm. Scott. 10 May, 1887.

285. What condition was the ventilation in when you got there? There seemed to be more air going to the western than to the Hill End district.
286. The ventilation was restored along the tunnel? Yes.
287. And arriving at the western what did you do? Finding a door blown down at the mouth of that heading we put up a stopping to send the air down to Hill End.
288. Did you go any further than the western? No.
289. Was the atmosphere hot there? Well, it was rather hot; but cooling down greatly.
290. Before arriving at the western junction did you observe the condition of the props on the road? No.
291. Did you not notice whether they had changed in appearance? The sheaves and rollers were blown up.
292. Did you not observe whether the props were charred or coated with dust? No.
293. Did you observe any of the bodies of the miners? Yes, I saw one on the flat, and five others about the western road end.
294. Could you identify them? The only one I could recognise was Melville. I did not know any of the others.
295. Did any of your mates identify the others? A man named Wm. Joel, I believe, identified one of them. He was an engine man outside.
296. Did you closely observe the condition of those bodies? No, not particularly.
297. You did not look as to whether they were singed, or whether they died from after-damp; or as to their general condition, whether they had been tossed about in any way? No, I never examined any of them except Melville. He was a big man; and I knew him by his neck.
298. At the top of the incline did you notice anything peculiar about the skips there? No.
299. Did you notice whether they were knocked about? No, I did not take much notice, for I was not in very good fettle when I went in the second time.
300. Did you go in further than the western junction? No.
301. In what part of the tunnel or district were you employed? In No. 1 heading.
302. Do you mean in the heading itself? Yes, we were working a contract.
303. You were driving the heading? Yes.
304. As a rescuer did you enter No. 1 and No. 2 headings? On Thursday, the next morning, I did, in company with Mr. McCabe, Mr. Green, Noah Hobbs, J. Charlton, and John Wynne.
305. In going up the headings, did you examine the bords? I never was in one of the bords. Messrs. McCabe and Green were there.
306. Did you notice any of the bodies lying along the headings? Yes, I noticed sixteen or seventeen bodies.
307. Did any of your party identify the bodies? Two of them were identified—Millwood and John Westwood.
308. Where were they found—on the heading or in the bords? On the main heading.
309. In what positions were they found as near as you can recollect? Millwood was found sitting between the first and second bord by the rib side.
310. Against the coal? Yes.
311. And what positions did the other bodies occupy? Westwood was sitting by a pillar—the last that was standing between No. 1 and No. 2.
312. And between Millwood and Westwood several bodies were got? Yes.
313. Did you examine those bodies and satisfy yourself as to whether the men died from the immediate and direct effect of the blast of an explosion, or from after-damp? I did not examine them for that.
314. Millwood was in a sitting posture you say? Yes.
315. And Westwood, in what position was he? He was half sitting and half lying.
316. Where did Westwood work? In No. 2 heading.
317. And do I understand you to say that you did not carefully examine any of those bodies? Yes; I did not examine them.
318. In working in No. 1 heading did you use safety-lamps? Yes.
319. And did you strictly observe the rule of working with safety-lamps? Yes.
320. Were the lamps locked? No; only during the first two shifts, when we started to work.
321. Did you examine any of the props in the heading to see whether they were scorched or burnt in any way? Not in the heading.
322. You did not examine the condition of the heading or the prop? In the bord end we examined the props on one occasion, and found them charred a little.
323. What conclusion did you arrive at from the general appearance of the heading, and the bodies being found there? I scarcely understand you.
324. Did it occur to you that an explosion had taken place? Yes, certainly.
325. Well, that is what I wished to ascertain. As to the cause of the men's death, what conclusion did you arrive at? I thought it was through the explosion.
326. Before the accident did you observe gas in No. 1 heading? Yes.
327. Where did the gas issue from? I think it was on the Friday or Saturday before the accident, we had a roll there, and the gas issued from that.
328. In what way did it first make its appearance—did you hear it blowing? No. We saw it after trying when we got the stone.
329. Was there any quantity of gas in the heading after that? No, not in our heading.
330. Had you much gas in No. 2 heading? No; I was never in it but once. I was in the Monday night before the accident. We had a drilling machine, and a man came and asked us if we would bore a hole with it.
331. There was a roll also in the face of No. 2 heading? Yes.
332. Did you use safety-lamps while you were boring that hole? Yes.
333. Did you of your own knowledge know there was gas in the heading? No; that is, I never tried for it.
334. Did the deputy visit you occasionally while you were at work? Yes.
335. Did you have any conversation with him as to the presence of gas in No. 1 heading? No; except that after we did get it, he warned us one or two shifts after, to be careful with the lamps as there was a little gas in the face.

336.

Mr. Wm. Scott. 10 May, 1887.

336. Did you ever have any conversation with the deputy on his rounds as to the presence of gas in the mine? No, sir.
337. You did not report it to him? No.
338. Why did you not report it to him? Well, he knew it himself.
339. Was there a night deputy? No.
340. Can you give any reason why the lamps were not locked? No, I cannot.
341. Have you read that section of the Coal-mines Regulation Act applying to the use of safety-lamps? No, I do not think I have.
342. Are there not special rules applying to safety-lamps? Yes; I have read them since the explosion. But I never had a copy before that took place.
343. You knew you were entitled to a copy of the rules? Yes.
344. Did you not ask for one? No.
345. Why did you not ask for one when you knew that you were entitled to it? Well, I never had any rules since I began to work. There were none at the collieries I was at.
346. You see now, however, that in not reporting the circumstance of those unlocked safety-lamps, you were committing an infringement of the Act? Well, as I have said before, the deputy knew they were not locked.
347. How did he know that? He knew he did not lock them.
348. In not reporting to the inspector, did it occur to you that you were incurring an infringement of the Act? No.
349. How did you work the coal in No. 1 heading? We holed it and shot it; sometimes we cut both sides.
350. In blasting, what explosive did you use? We used compressed powder, and a fuse.
351. How did you light the fuse? With a touch, on which we canted the lamp.
352. Did you fire the shots yourselves? Yes. We sent for the deputy once, and he told us to fire the shots ourselves. He never fired any for us.
353. With what material did you tamp the shots? Sometimes small coal, and at others we used anything we could pick up.
354. Did you damp the coal? Yes, generally.
355. Did you consider that method of lighting the fuse a safe method? I thought it was safe at the time.
356. Did you ever really consider the safety or otherwise of it? Well, I cannot say that I did very much.
357. Did you ever observe the gas to fire at your heading? No.
358. Did you hear at any time of the gas having fired in your heading? Yes; I heard of it having lighted up the night before.
359. Who told you? It was my mate Hope, and the boy.
360. Who told Hope? He saw it, I think.
361. What did he tell you? Well, I was in the face, and he was away back, and he told us to keep down, as the gas had fired. When I got up it was out.
362. Where did it fire? At the wheeler's lamp.
363. Do you know at what point the wheeler fired the gas; was it inside the stenton? It was at the danger-board.
364. And with the heading so full of gas that it fired at that point, do you think it was a safe practice to light the fuse by tilting the lamp? Well, I think it would have been a bad job for us if it had fired that night.
365. You say the gas fired? Yes, but that was about 20 yards back from the face.
366. Did the wheeler on all occasions hang his lamp at the danger-board? I did not take that much notice.
367. Did you ever notice if he came in with a naked light? He never came in with a naked light.
368. How did the deputy come to the face of the heading? He often came up without a light.
369. Did you receive any extra price for working in the gassy section on account of using safety-lamps? Yes, we received 3d. per ton extra.
370. Did you receive the extra tonnage in order that you might display greater care and caution? Well, there is more difficulty in working with a safety-lamp than with a naked light.
371. Was it not a precaution against accident—so that you could take extra care and use caution? Yes, I suppose so.
372. And notwithstanding that, you adopted the plan of lighting the fuse by allowing the flame of your lamp to pass through the gauze? Yes.
373. When you were told that the gas had fired in your heading, did you make any report to the manager or overman? No.
374. Are you now aware that by refraining from reporting this circumstance to the manager or the overman you were infringing the general rules? Well, I never got a chance to report to anyone.
375. How was that? We did not see anyone. It was 12 o'clock before we got home from work that night.
376. Could you not have done so next day? We had not much time next day. We were looking after ourselves.
377. To put it in another light, did you not consider that by not reporting this circumstance you were endangering the lives of your fellow-workmen? Well, I do not know.

[Rule 15 read:—Should fire-damp be found in any place in the pit where naked lights are used, a danger signal must be set up across the entrance to such place, beyond which no person must go (except those authorized to examine and remove the evil) until the place is restored to its proper working order, and permission given. Should any unexpected discharge of gas occur, the overman must order all naked lights to be extinguished, withdraw the men and boys, and make the manager acquainted with the case, in order that the evil may be remedied, and the places restored to their proper working order. Hewers and others, when using naked lights, are strictly cautioned against the discharge of gas, where faults, rolls, and backs are met with, and on its appearance, they shall immediately leave the place and report to the overman, and shall on no account return to the place without proper authority.]

378.

Mr. Wm. Scott. 10 May, 1887.

378. Do you not think that the occurrence of gas in such quantity that it lighted at the danger-board, implied that some danger existed? Well, if there had been much danger I think we should have reported it.
379. Do not you think that gas being present in such quantity as to fire at the nearest cut-through was a sufficient reason why you should have reported to the management? Well, we did not report it.
380. I suppose you are aware that these special rules are intended to ensure safety in the working and maintain discipline? Yes.
381. You say the wheelers or deputy never approached the face of No. 1 with a light? Not with an open light.
382. Before firing a shot did you take any precautions to get quit of any gas that might have accumulated in the heading? We would search for it, and if we found it present in any quantity we would not fire the shot.
383. What measures would you have taken to get rid of the gas if you had found it present in large quantities? There was, as a matter of fact, never much to get rid of.
384. Was there much dust in that part of the mine where you worked—was it a dry mine? Yes. There was not much dust in the heading that I worked in; I could not say what there would be in other parts—in the bords.
385. Did you apprehend any danger from the presence of dust in the mine? No, sir.
386. Were you aware that coal-dust in a mine is liable to explode under certain conditions? I have been told so, but was not aware of it before that.
387. Was that since or before the accident? Since the accident.
388. In that section of the colliery where the use of safety-lamps was enjoined, were the men in the habit of taking tobacco-pipes or matches in with them? Yes, as far as the danger-board.
389. Would they ever take them beyond that? No; we always put our clothes off at the danger-board.
390. Where did you smoke? Outside the danger-board.
391. Would that be immediately against the danger-board? No; not immediately against it—a yard or two away, perhaps.
392. Did it occur to you that there was something inconsistent in men who were obliged to work with safety-lamps taking tobacco to the face? No, sir.
393. Do you know what the practice with regard to smoking materials is in the larger and better regulated collieries in England? Yes; I know they will hardly allow pipes to go into a pit, let alone matches.
394. In the light of subsequent events do you think a similar rule ought to be enjoined in this district, where safety-lamps are used? Yes; I am of that opinion.
395. Then your opinion as to this accident was that it was the result of an explosion of fire-damp? Yes; I thought that was the cause of it.
396. *Mr. Neilson.*] What collieries did you work at in the old country? I worked at a place called Pit Hill for fourteen or fifteen years.
397. Was there any gas there? A little occasionally.
398. You say you were never supplied with any rules? No.
399. When you reached the fall in the main tunnel, did you detect any sign of powder smoke? No; I noticed the smell of after-damp.
400. Was it usual to find some gas when you struck these rolls that have been referred to? Well, I never had much practice in Bulli; I was about seven weeks in it altogether.
401. You were on contract in that district? Yes.
402. On the visits of the overman and deputy, I suppose, a general conversation would take place among you? When we met the deputy we generally asked him about the work, and he would reply. We had started on the night shift just before the explosion, and he told us what it was like.
403. Did your ever have any conversation with the overman and deputy? A little; the same as I would with the other men.
404. Did you ever brush the gas away from the face before you lit the fuse? No; I never saw that much in the face.
405. Did you ever hear of Millwood doing so? No.
406. You stated, in answer to the President, that you left the mine at 12 o'clock on the occasion when the gas fired at your heading. How far do you live from the residence of Mr. White, the overman? About 200 yards.
407. Would it have taken you long to go and report that circumstance to White if necessary? No; it would not have taken us long.
408. But you did not think it necessary? Well, I suppose we did not.
409. *Mr. Hilton.*] Can you say whether or not there was ever any gas in the place previous to your firing the shots? There was gas before we went in—before firing the shots.
410. At the time of firing the shots, did you try immediately previous to ascertain if there was gas in the face? Not until we cut the stone, I think.
411. You say that smoking was indulged in outside the danger-board—was the overman aware of that practice? I cannot say.
412. Do you know if Millwood ever saw anyone smoking there? I cannot say.
413. Did you ever receive a copy of the Bulli special rules? No; I had no knowledge of them before the explosion.
414. Did you apprehend any danger from gas previous to the explosion? No, not in our heading.
415. Did you ever see bratticing used in any of the working places of the mine—in your own, for instance, or any other? I never saw brattice used there.
416. How long did you work in Bulli altogether? I worked there seven weeks.
417. Did you send for the deputy to fire your shots? I sent for him the first morning.
418. Did he fire it himself? No, we fired it.
419. Did he show you how to fire the fuse by tilting the flame of your lamp against the gauze? No.
420. In what way did he tell you to fire the shots? He did not tell us at all.
421. Did he not tell you not to use naked lights? No; he told us to be careful when we got the gas.

Mr. Wm. Scott. 10 May, 1887.

422. Who would lock your lamps? Millwood, the deputy. As a rule, no man has his lamp locked unless the deputy locks it for him.
423. Are you aware of any rule that would prevent you reporting danger to the deputy? Well, I think I would be interfering a little.
424. You are of opinion (referring to rule 13) that if you were out of your own place and seeking for the deputy, say, you would be coming within the meaning of that clause? Perhaps.
425. Do you think you would be interfering with the management in any way if you reported the existence of gas in the pit? I think I should be interfering a little.
426. Then on that account, if you saw danger, you would not report it—is that so? No; I do not say that.
427. Well, if you saw danger, would you report it? If there was great danger I would.
428. *Mr. Jones.*] On entering the mine for the first time after the explosion are you quite sure that it was the stopping on the right side that you saw blown in? I think it was on the right-hand side.
429. What side was the first stopping? The right-hand side.
430. Were you among the first of the explorers? Yes.
431. Are you sure that Millwood's body was found, as you say, between the first and second bord? I would not like to be sure; but I know that it was found in a sitting position somewhere near there.
432. You saw other bodies lying down. Did they look as if the men had been in the act of running out of the mine? Yes.
433. Was there not a bord being turned away close by there? Yes; a little way outside the stenton.
434. Had they worked with naked lights? Yes.
435. Do you think that was an evidence of good mining? No; I think it was a source of danger.
436. Yet they were allowed to work in that way? Yes.
437. And the only reason you had for not reporting the presence of gas to the deputy or the manager was that they were aware of it? Yes.
438. That is the only reason you did not go out of your way to report it? Well, as I have said, I had no call to report it, as they were themselves aware of it.
439. I think you have already stated—I am not sure—that it was the custom for the deputy to fire the shots in some portions of No. 2 heading? Not Millwood. I think Crawford used to before the strike.
440. Do you know how he did it? I never saw him fire one; but, I think, I have heard that he used a wire.
441. *Mr. Clarke.*] Are you personally aware that the management knew of the gas catching fire at night? No.
442. Do you not think that gas in such quantities catching fire was an element of danger? It might be. But I have seen bits of blowers at home when we have not reported them, if we thought there was no danger there.
443. Then it was not in consequence of this 6th rule of the colliery special rules that you did not report the occurrence you have described? No; if we had seen the deputy on that night we should probably have reported it.
444. But do you still think that reporting would be an interference with the management of the mine? Yes; I think it would have a little to do with it.
445. *Mr. Croudace.*] Where you worked in England did they lock your lamps? Yes.
446. Did the deputy examine your lamp here after you received it from the lamp man? No, sir.
447. With the knowledge you had at home of fiery mines, and the great caution used, do not you think that you received sufficient warning or teaching to show you that you should have done or said something yourself relative to these lamps being unlocked as they were given to you—I mean with the view to prevent a recurrence of such experience? Well, I do not think there was any necessity for me to tell him of a thing he knew about as well as I did.
448. You did not think it was necessary, after all the care and caution you had seen exercised at home, to caution anyone out here about it? The fact is, I have not been very much among the men here, and I do not see any more danger in the lamp being unlocked than locked, provided a man keeps the bottom on.
449. That is your opinion? Yes.
450. Now the question I am about to ask has been put before, but I think it necessary to ask you again. When you tilted your lamp to light your fuse, did not the flame come outside and strike the edge of your touch-paper? I do not think if we held the lamp over twenty times the flame would come through the gauze. It would make the gauze red-hot, but the flame would not come through.
451. Could you light the touch-paper before the gauze was red-hot? No.
452. Had you to hold it till the gauze was red-hot? Well, I don't know whether the gauze would be red-hot exactly, but I suppose it would be; I know the gauze has been burnt.
453. Was that in your opinion a right or proper thing to do? No, it was not.
454. Have you not lit your fuse by lifting the top of the lamp, as miners frequently do? No, I have not.
455. You have stated that the mine was rather dusty. Where did you get your damp stemming from? I never stemmed with anything else but coal. I am not accustomed to use dry tamping; it comes back too often.
456. You say that the boy's lamp lit up the gas at the caution-board? Yes.
457. Did I understand you to say that you or your mate were turning away a bord near there? The in-by side of the stenton, and between that and the danger-board.
458. Did not the gas come up to you in the face where you were working? No.
459. Has not No. 1 heading a slightly rising tendency all the way? I think it has; it is ballasted up now.
460. What appears strange to me is this—that knowing the air is travelling along No. 1 heading, and going through the stenton into No. 2 heading, and so on, that you should be on the in-by side of the rise heading and the gas should be on the out-by side. Was the stenton at a higher point than when you were in the face? I do not think it was higher at the stenton than it was in the face.
461. Was there much gas there when it lit up? No, I don't think there was.
462. As a man accustomed to fiery mines, did you think there was anything in the condition of No. 1 heading to cause you the slightest fear or anxiety? Well, if there had been any there that night—that is any large quantity—it would have been a bad thing for us. There was just a little. I tried before I lit the shot, and found a little.

Mr. Wm. Scott. 10 May, 1887.

463. Was there much gas present during the time you worked in that heading? No; there was not much.
464. As much as you would see in fifty mines in England, I suppose? Yes.
465. Did you hear at any time of gas being found in any of the bords off No. 1 heading during the time you were working on the out-by side? No; I never spoke to any of the men who were working in the bords.
466. Have you any knowledge of how your heading was ventilated, or as to how the air reached you? We had a very good supply along the heading.
467. Had you a good current of air generally up to the face from stenton to stenton? We started within a yard or two on the in-by side of the stenton, and it brought a fair quantity of air all the way.
468. From the last stenton up to the face where you were working, did you see any necessity for the use of brattice on account of gas accumulating? I never saw any gas in our place till we got this stone, and that was on the Friday or the Saturday before the explosion.
469. Did you perceive any necessity for the use of brattice? Not in our heading.
470. The gas made its appearance when you reached the roll? Yes.
471. Are these rolls of frequent occurrence in the district? Well, I cannot give you an answer to that, as this I speak of was only the second one I came to.
472. Was there a door across the main engine brow to force the air into your No. 1 heading? Yes, sir.
473. Would the leaving open of that door affect the ventilation of your heading? Yes, it would.
474. Have you ever seen that door left open? There was a trapper kept at the door to open and shut it.
475. Going along the headings, and in the stentons between Nos. 1 and 2 headings, what sort of stoppings had you? They were stone and slack, I think.
476. Could you give me any idea of the thickness of them? No; I could not.
477. Could you give me any idea of the quantity of air you had at No. 1 stenton,—that next the face? No; I could not give you an idea of the quantity of air returned.
478. Have you never heard the manager or overman, or one of the inspectors, pass a remark such as "Well, you have a first-class current of air here—so many thousand feet,"—giving the quantity? No, I have never seen one of the inspectors there yet.
479. When you were on the night shift? Aye, or when I was on the day shift.
480. Did you not know the quantity of air going round them—10,000 or 12,00 cubic feet? I did not know the quantity of air passing.
481. *President.*] The amount of ventilation satisfied you? Oh, yes.
482. *Mr. Croudace.*] Referring to rule 6, I think I understood you to say that it would probably act as a deterrent against your reporting the presence of gas? Well, I think it would a little.
483. The rule says,—"Any employee interfering in any way with the orders issued by the colliery manager or his overman, for regulating the work of the mine, shall be liable to dismissal without notice." Now, I want to see if you can in any possible shape or form construe this No. 6 rule in such a fashion as seems to have got into your mind—that you should not report gas or any other danger that might appear. For instance, I will ask you in the first place, has there ever been, to your knowledge, an order issued by the manager or his overman, or the deputy, against your reporting gas in the mine, or bad roof, misconduct or carelessness on the part of the men, or anything else that might lead to evil consequences to yourself or others? No, sir.
484. Then do you think that No. 6 rule could possibly, in any shape or form, prevent you from reporting that you had met with gas. After I have read it to you in the way I have done, and asked you the question whether you have received such orders against, do you think No. 6 rule could or should in any way prevent you from giving such information as would possibly lead to the prevention of a serious accident? Well, I would like to know what that rule has been put there for.
485. Well, it is scarcely for me to explain it to you, but if I were to, I should explain it something after this fashion:—Supposing the overman had ordered your heading No. 1 to be stopped, and that no one was to go into that heading, and some one came and said: "What has that to do with it?—you go in, Bill"; that would be a direct violation of No. 6 rule, because it would be a breach of a special order issued by a person in authority. Or to put it in another form—supposing an official in charge were to order the men to go on the western plane instead of the Hill End, and some one else were to order them to do the contrary, that would be a violation of all discipline, would it not? Yes.
486. But surely the reporting of an existing and imminent danger does not come within the rule. Supposing you came across a heavy blower in No. 1, would you not warn the men near you and the deputy? Yes, I think I would.
487. *President.*] Then it was just a question of the amount of danger that would restrain you from reporting, or the opposite? If there had been in my opinion a great amount of danger there, I think I would have reported it.
488. *Mr. Hilton.*] Was there ever an impression created in your mind that it was wrong to allow those who were using Davy lamps to go into the mine with their lamps unlocked? Well, I knew that it was wrong before we went in.
489. Was there at any time within your knowledge a person appointed to see that the lamps were locked? Millwood locked them twice after the strike, and Crawford locked them before the strike.
490. Then Millwood was appointed to see that the lamps were locked? Yes; I think so.
491. Can you say whether it was negligence or oversight that caused the practice to be discontinued? No, I cannot.
492. From the time that the lamps were locked until you were allowed to take them in unlocked, how long was it? I do not know.
493. What period elapsed between the time when Millwood locked your lamps and when he discontinued locking them? He locked them the first two days, and never locked them afterwards.
494. *Mr. Jones.*] Was the method of firing the shots adopted by you the customary method throughout the colliery? I cannot say as to that; it was just a method adopted by ourselves.
495. Was the management aware of your mode of firing the shots? They never inquired.
496. Then you never received any specific instructions on that subject? No.
497. *President.*] Did you ever see shots fired by means of a wire passed through the gauze? Yes.
498. Do you think that would be a safer way of firing shots? Yes; I think it would have been better than the other way.

Mr. Wm. Scott. 10 May, 1887.

499. If, in tilting the lamp, the flame passed from the inside of the lamp to the outside, where the fuse was applied, what additional safety would there have been in locking the lamps, seeing that by your own act the flame passed through the gauze? I do not see how it would come through.
500. You know the flame was on the inside, and the fuse on the outside, and you had to connect the light with the fuse? Well, you can make the touch-paper take hold very quickly.
501. No doubt; but you are convinced that it would be safer to adopt the method of applying the wire? Yes, I think so, certainly.
502. You stated, in answer to a question by Mr. Jones, I think, that it was an evidence of bad mining to allow naked lights in a bord (No. 8) which is broken off about a yard or 1½ yard below the last stenton close to the caution-board? Yes.
503. In what way was it dangerous to permit naked lights in that heading, where there was no gas? I do not think there was much gas in that heading.
504. That is what I am coming to. If no gas existed in the bords, and as far as we have heard we know of no gas in the bords off No. 1 heading, what danger was there in working with naked lights in those bords. You see I want you to revert to the answer you gave to a question by Mr. Jones as to No. 8 bord. You stated that it was an evidence of bad mining, or something to that effect, to allow naked lights there? Well, if they were accustomed to get blowers in the heading, they might expect to get it in the bords as well.
505. You have no right to anticipate the blowers. Of course, if they had reason to fear such, they would require to take precautions. Did you hear of any gas being seen in the bords off No. 1 heading? Yes; I think I heard of it from one of the strange men that came there.
506. Do you know who it was that told you? I heard one of the men going home saying that he had seen gas in his bord that morning. I think it was the morning of the explosion.
507. Do you know the man? No, he was a stranger; I cannot tell his name. I just heard one man telling another.
508. *Mr. Jones.*] Will you inform the Commission if the name should occur to you? Yes.
509. *President.*] Try and recollect where you were, and under what circumstances you heard the remark made; that will probably assist you in recollecting, and, if so, will you indicate the name to us? Yes, I will try to find out by asking the man, whom I know by sight.
510. Who was it that turned away the last bord? It was my mate.
511. Is not the in-by side of the bord nearly opposite the caution-board? There are two bords just turned off—one at the out-by side of the danger-board, and the other at the in-by side; that is the one my mate turned off. Very little work had been done in it.
512. Were any naked lights allowed to go beyond the stenton? No.
513. Did you see the boy light up the gas near the caution-board across the stenton? I did not see it; I heard of it.
514. Is it not, in your opinion, dangerous to work with naked lights in such close proximity to the danger-board? I do not think naked lights should be there at all. I think safety-lamps should be used.
[*The witness withdrew.*]

Charles Hope sworn and examined:—

Mr. C. Hope. 10 May, 1887.

515. *President.*] You are a miner? Yes.
516. Working in the Bulli Colliery at the time of the accident? Yes.
517. How long have you been a miner? I think I have been working in different pits for about fifteen years altogether.
518. In this country or in the old country? In this country for about twelve months, and before that in the north of England.
519. Have you worked in fiery mines in the old country? Yes.
520. And you worked with safety-lamps? Yes.
521. You know then the object of safety-lamps? Yes.
522. In what district of the Bulli Colliery did you work? In the gassy section.
523. That is the Hill End section, is it not? Yes.
524. In what position was your working place? No 1 heading.
525. Your mate was William Scott? Yes.
526. Were you working on the day or night shift just before the accident? We had been working on the day shift, but we were working on the night shift the week of the accident.
527. And I suppose you were preparing to go to work when the accident occurred? Yes.
528. How were you apprised of the accident? My mate thought it was a tree that had fallen.
529. Were you in your own house at the time? Yes; I heard a noise and ran outside. The pick-sharper was the first man I saw. I asked him what was the matter, and he told me that the pit had fired. Immediately I got to the pit mouth and asked for a Davy lamp; I got one, and put on my own gauze, which I had with me, and went inside.
530. Who were with you? I was a little advance of some others. Scott came just behind me. We went up about 200 yards. There was a fall of stone there and we could not get any further.
531. Did you see the horse that was accustomed to draw coals about, there? No.
532. Did you see the boy who drove the horse? No.
533. What did you see or do about there? We were joined there by Lang and Chalmers.
534. Do I understand that the fall commenced at the overcast? It was beyond the overcast.
535. How far? About 150 yards.
536. Then you were stopped by the fall? Yes.
537. Were did you go when Lang and Chalmers came up? We then found a stopping blown out just near the fall.
538. On which side of the road was the stopping blown out? On the right-hand side going in.
539. What was it composed of? Stone and slack, I think.
540. Was it blown into the workings or on to the road? It was blown from the workings on to the road.

541. Did you repair that stopping? Yes; we made it up the best way we could, and we asked Chalmers if there was any other road by which we could get up. He told us that we might go through slacky, and we went along that way.
542. And you struck the tunnel again? Yes.
543. Were there falls in the main heading? Not in the grip way.
544. Were there any falls beyond that? I did not observe any.
545. Having arrived at the tunnel, what did you do then? When we repaired the stopping near the fall we went up the gripway, and we found no falls until we got through into the tunnel again by means of the horse road. Up to this point the road was clear.
545½. You proceeded into the main tunnel through the horse-road? Yes.
546. And you found other falls in the main tunnel? Yes.
547. Did you proceed over those falls? Yes; I could not say the distance, but I think we went about 400 or 500 yards from the bank head. We came back for the purpose of sending in canvas to repair stoppings with. After we had been out twenty minutes we went back again, and this time we got as far as the western junction.
548. Did you pay any attention to the state of the atmosphere and ventilation? The atmosphere was very thick with what I call after-damp.
549. Have you had any experience with after-damp in England? Yes, when a little gas would light.
550. Was the ventilation partially restored at the time you got up to the tunnel the second time? Yes.
551. It was taking its usual course? Yes.
552. Was it hot? Yes, it was pretty warm.
553. Did you see any signs of steam? No.
554. Was the atmosphere laden with dust? I could not say. It was thick and disagreeable.
555. Did you find the western door blown inwards? Yes, and I helped to repair the door with the object of sending the air down the gassy section.
556. You had it closed up for the purpose of sending the air down the main tunnel into the gassy section? Yes.
557. When did you return again? The next morning at six o'clock.
558. With Messrs. Maccabe and Green? Yes.
559. Where did you go that morning? We went into Nos. 1 and 2 headings.
560. On the night before, when you penetrated to the junction of the western, did you pass any bodies on the flat? Yes; on the bank head.
561. Did you pay particular attention as to whether they were burnt? I paid no attention.
562. You simply passed on? Yes.
563. Did you pay any attention at the time when they were being taken out? Not at that time.
564. Did you observe how they were lying? They were lying on their faces.
565. Did you observe the way their heads were turned? Their heads were lying towards the mouth of the tunnel as if they were making their way out, or had been blown that way.
566. Do you know the effects of after-damp, or have you had any personal experience of an explosion? No.
567. You had never been a rescuer before? No.
568. Generally you know the effects of after-damp? Yes.
569. Was there anything inconsistent with the idea that these men had been overtaken by the after-damp and choked? I did not examine them particularly.
570. But their heads were turned towards the mouth of the tunnel? Yes.
571. You proceeded along the main tunnel on the following morning. Did you recover any bodies outside of No. 1—that is before you reach the heading? Yes; there were two boys lying down. That would be about 100 yards on this side of what we call Millwood's cabin.
572. I suppose they had been cleaning the roads? Perhaps so.
573. Did you pay particular attention to the position of the bodies? No, I did not.
574. In going up No. 1 heading did you see any bodies? Yes.
575. How many, and in what position? Well, I believe there would be about sixteen in that heading at different places.
576. You did not see any in the bords? No; I was not in the bords that day.
577. Did you observe the positions of the bodies in No. 1 heading? I believe the first three were lying between the first and second bord, and Millwood was sitting up against a rib of coal.
578. Do you refer to bords that were being worked, for there are two that had been stopped? Yes.
579. Millwood would be sitting near the fourth bord? Yes.
580. How was he sitting? He was just sitting up against the rib; I do not think he was burnt.
581. Did you observe his hair? No.
582. You did not take particular notice of the conditions of the bodies? No, I did not.
583. There were three found at this point, of which Millwood was one? No; there were three bodies besides Millwood.
584. Were they also in a sitting position? No; they were lying across the way. I thought when I saw them that they had been talking to Millwood.
585. Did you identify them? No; they were strangers to me.
586. You then proceeded onwards? Yes.
587. Proceeding onwards there was a group of five found immediately above these? Yes.
588. Did you pay attention to them? No, not particularly, because I did not know the men.
589. Where was the last body got? I believe the last body was that of John Smith, who was one of our mates working on day shift. He was found between the horse's heels, just above the stenton. I believe it was Smith that was found there.
590. Was anyone found at the mouth of the stenton? Yes; a man that worked in No. 2 heading. I believe it was Jerry Westwood; he was also sitting.
591. What do you suppose he was doing there? I could not tell.
592. Did you observe the condition of any of the props. Were they perfectly fresh, or were they charred? I did not take notice of them that day, but I was in on another night with Messrs. Gardiner, Evans, Crawford, and another gentleman, and we examined the main tunnel, No. 1 heading, and the bords off the heading. We did not find any signs of fire in the tunnel, and nowhere until we came to the headings.

Mr. C. Hope. 10 May, 1887.

593. Did you spend much time over the examination? Yes.
594. You were satisfied that there were no traces of fire until you arrived in No. 1 heading? Yes, and in the bords off No. 1 heading.
595. And what evidence of fire did you see there? The props seemed to be burned there.
596. Were they burnt in one position or all round? Mostly the fronts of the props next to the heading were burnt.
597. You were perfectly satisfied in your own mind that these props were burnt by the blast? Yes.
598. You did not observe whether the hair of the bodies was singed? No, I did not.
599. Did I understand you to say that you were working with Scott in No. 1 heading on the night shift? Yes.
600. Did you ever at any time see gas in No. 1 heading? Yes, but not until Friday or Saturday, the week before the explosion, when we came across the stone in the heading.
601. Was it stone or a roll? A roll.
602. And you observed the gas after striking the roll? Yes.
603. Did it show itself in any quantity? No, there was not a great deal; it would take the lamp about 6 inches from the top.
604. There was a danger-board, I suppose, and beyond that board no naked light could be taken? There was a danger-board, and nobody was supposed to take a naked light beyond it.
605. Did you ever see a naked light beyond it? No.
606. Did you ever see a naked lamp hanging on the board? Yes, the wheeler's lamp.
607. Did you think that was safe? Well, if it was safe to go the stenton with a naked light, it was safe to go to the danger-board, because the board was fixed half-way across the stenton.
608. Then No. 1 was the intake of the air, and No. 2 the return? Yes.
609. Had you a sufficient quantity of air in No. 1 heading? Yes; but, of course, the heading was 20 yards in advance of the air.
610. But you did not observe any gas in No. 1 heading until three or four days before the accident? No.
611. Did you ever test the heading for gas? Yes.
612. And found none before this time? And found none.
613. You were careful in testing for gas? Yes, and I found none till Friday or Saturday; I forget what day it was.
614. Can you distinguish the different qualities of gas—did it fill your lamp very rapidly? It would fill the lamp, but not so quickly as I have seen it at home. I have seen it when it would not fail the lamp at all.
615. Did you ever hear of the gas in No. 1 heading being fired? Yes; it was fired by the wheeler's lamp on the night before the explosion.
616. Where was the lamp hanging? I would not be sure whether it was hanging on a prop or on the danger-board.
617. You refer to the prop on which the board was fixed? Yes.
618. The gas coming into contact with the naked light at the danger-board ignited? Yes.
619. The use of Davy lamps was enjoined in No. 1 heading? Yes.
620. Were they locked lamps? No.
621. Were they never locked? Yes; they were locked for one or two days.
622. Can you give any reason why the practice was discontinued? No, I can not.
623. Did you ever complain of the circumstance to the deputy? No.
624. Did you report the fact of the gas being fired to the deputy? No; we had no chance to report it, for the accident happened next day.
625. What time did you leave off work that night? At 12 o'clock, or half-past 12 o'clock.
626. Did you not think it worth while to report the circumstance on the Wednesday to some official of the colliery, the overman, or the deputy? Well, I did not give it a thought.
627. If you had given it a thought, should you consider it your duty to do so? Yes.
628. Did it not alarm you when you were informed that the gas was fired at the danger-board with the naked light? I did not feel alarmed.
629. Can you account for that? I was satisfied there was not much gas in the heading.
630. Although it fired at the danger-board? Yes.
631. You are positive that before Friday, four days before the accident, no gas existed in No. 1 heading? None.
632. Did gas exist in the bords off No. 1 heading? I do not know; I was not working there.
633. Did you ever hear your mate say there was gas there? No.
634. Were the places off No. 1 heading regularly examined before the men commenced work? I could not say for certain, but I believe they were examined.
635. And they would be examined before you commenced work? Yes; we have had to wait some mornings until Millwood came out.
636. Where did you wait? We waited where we got the safety-lamps.
637. When these places were examined by the deputy or overman, did he chalk the face as an indication that he had been there? No.
638. Do you know that it is the practice in England for the overman or deputy to chalk the day of the month in the faces each morning to show that he had been there? Yes; that is the practice at home.
639. Do you know if Millwood ever cautioned you to be careful? Yes, I believe so, on Saturday morning.
640. Did you take care? Yes, when I found the gas.
641. Having received that caution, do you think that you did your duty to Millwood by not reporting the presence of the gas which fired at the danger-board? The gas fired on the Tuesday night, and the accident occurred next day.
642. Yes, he enjoined you to be careful on the Saturday, and the gas fired on Tuesday night; but do you not think that it would only be right to intimate the circumstance to some official of the colliery? Well, you see, it was after 12 o'clock at night when I got home.
643. Did the deputy travel through your section with an open lamp, or with a safety-lamp? With an open lamp in the day-time.

Mr. C. Hope.
10 May, 1887.

643. How did the deputy travel at night? There was no night deputy.
644. The wheeler used an open lamp? Yes.
645. And would light it just outside the danger-board? Yes.
646. Was that, in your opinion, a safe proceeding? Well, it might be safe in the heading where we were working, but I do not think it was a safe proceeding in No. 2 heading, which had the return air.
647. For the reason that the return air would carry with it all the gas that issued from Nos. 1 and 2 headings? Yes.
648. Is this your opinion: That No. 1 heading being the intake, air was safe if no gas existed in the bords, but that it was not safe to use naked lights in the bords of No. 2 heading, because gas existed in a larger quantity in the heading? Yes; that is my opinion.
649. Tell us shortly how you worked the coal in No. 1 heading—did you work it with powder? Yes.
650. Before firing a shot was it the custom to hole the coal? Yes.
651. You never blasted in the solid? No.
652. Did you nick it or side-cut it? We never nicked it.
653. What explosive did you use? Patent blasting-powder.
654. Powder cartridges? Yes.
655. How did you fire the cartridges? With fuse.
656. With ordinary fuse? With ordinary fuse.
657. Beckfort's fuse? I don't know, it was double-take fuse.
658. How did you light the fuse? We used to fire our own shots; but the first day we started we sent out for Millwood to come and fire a shot; he came in, took one of our lamps, examined the face. He said, "She's all right, you can fire the shot," and we always fired them afterwards. We used to light the touch-paper at the gauze of the lamp and then apply it to the fuse.
659. Did you consider that that was a safe operation to allow the flame of the Davy lamp to be applied to the touch-paper outside? Yes.
660. Are you aware whether the lamp used in that way would be liable to destroy the gauze? Yes, in time.
661. Well, if the gauze were so destroyed would it impair the safety-lamp? Yes; of course if the wire broke the flame would have a better chance of getting through.
662. Yet you were in the habit of firing shots in that way? Yes.
663. Would you be allowed to fire them in that way in England? There are very few mines where men are allowed to fire shots at all in gas, but where they do fire them they generally use a wire.
664. Do you consider the use of a wire a safer means? Yes.
665. Do you mean by that it would be a quicker means? I do not think there is much difference.
666. Do you prefer the unsafe way to the safe? Well, we got the touch-paper given to us for the purpose of firing shots and we used it.
667. I suppose a pennyworth of wire would be sufficient to last you ten years? I don't suppose it would cost much.
668. I suppose you know what a safety-lamp is, and the objects for which it is used? Yes.
669. Did you ever know these lamps to be unscrewed and used as naked lights? Not inside of the caution-board.
670. In your opinion would an unlocked safety-lamp be less safe than a locked lamp? Both would be equally safe, provided they were not opened.
671. But could not an unlocked lamp be easily opened? Yes, of course.
672. Nevertheless you did not pass any remark to the deputy that he had omitted to lock them? No.
673. Have you ever seen in the mine any of the men unscrewing their lamps when they ought to have been locked? I have never seen them do it inside the caution-board.
674. Did the deputy or overman prohibit men taking in and using matches and tobacco? Not that I am aware of.
675. If you had struck a match at the face of the heading would anybody have objected to it? Yes; I believe any of the miners would have objected to it if they saw it done.
676. Do you think there was anything inconsistent in the men taking in matches and tobacco where safety-lamps were used? Well, naked lights were allowed to go up as far as the caution-board.
677. You were prohibited from using naked lights in your heading, and yet were allowed to take in matches? I never heard anything to the contrary.
678. Do you think you ought to have been allowed to take matches where safety-lamps were necessary? Not inside the caution-board.
679. Did you ever take them in? No.
680. Did your mates? Not that I am aware of.
681. Do I understand you to say that, had you observed a dangerous quantity of gas in your heading, you would have reported it to the authorities? I would have done so.
682. Then, looking at all the circumstances, what conclusion have you arrived at as to the cause of the accident? Well, I could not say.
683. Was it an explosion of fire-damp? Yes; I believe it was caused through fire-damp.
684. Fire-damp will not explode of itself? I should think not.
685. You made an examination of No. 2 heading after the accident? I was just in there once.
686. I mean since the accident? I was in there since the accident.
687. And you examined it? The day I was in there I could not examine it very well, because the ventilation had not been properly restored.
688. Was there gas there? Yes.
689. You also had an opportunity of inspecting the damage that was done? Yes.
690. And the course taken by the blast? Yes.
691. Would you like to make any statement of your opinion as to the cause of the accident? No, I would not.
692. *Mr. Neilson.*] Where were you at the time that the boy's lamp set fire to gas at the danger-board? I was turning a bord away; it was about 5 or 6 yards in the in bye side of the caution-board.
693. Did you see the lamp when it ignited the gas? I think I was repairing a skip at the time.
694. Did you ask the boy to hang his lamp on the inside of the danger-board? No, not on the inside. I asked him to put his lamp inside the prop so that I could see what I was doing. 695.

Mr. C. Hope. 695. And by so doing you had a better light? Yes.
696. How long was it before the gas went off? Perhaps 5 or 10 minutes.
10 May, 1887. 697. What position was the lamp in? It would be close against the top of the prop.
698. That would throw a light down on the top of the skip? I was only 4 or 5 yards on the in bye side of the light, and I believe his lamp would be close to the roof.
699. You are sure it was on the prop and not on the board? Yes.
700. There was no other prop there? No.
701. Millwood and you were, I suppose, good friends? Yes, always pretty good friends.
702. You talked to each other? Yes.
703. Between Saturday morning, when you first saw gas in the heading, and Tuesday night, when the boy set fire to it, did you ever make any report to Millwood or White? I did not think there was any necessity to report it when the deputy told us himself on Saturday there was a little gas in the heading.
704. Did you always find Millwood in before you on the front shift? Yes.
705. You presumed that he had been examining the working places? Yes, we waited for him once or twice, and that led us to think that he had been examining them.
706. Did you ever see any lamp unscrewed in this heading? Yes.
707. Inside the danger board? Not inside.
708. Were you frequently in No. 2 heading? Only once since the strike, and that was the first week we started.
709. What took you there? Westwood, who worked there, asked me to come in and examine a blower which had been struck there. I went in and found no gas until I put my lamp against the rib where the blower was, and here the gas would fill the lamp.
710. Where was the blower? It was half-way up the seam of coal on the left-hand side.
711. And that was the only place where you detected gas? Yes.
712. Was there nothing in the roof? Nothing; the face was not far from the stenton, for it was just after we started work since the strike.
713. You saw nothing there before the explosion? None.
714. *Mr. Hilton.*] Did you ever notice any difference in the ventilation during the shift? I have noticed it sometimes slighter than at others.
715. Was there any one in charge of the district where you worked at night? Not that I am aware of.
716. Had there been any one in charge of the mine at the time the gas fired in your heading would it have been easier for you to report the matter? I would have reported it that night.
717. You stated that although it fired at the danger-board you did not report it on account of your going home at 12 o'clock at night? Yes, it would be nearly 1 o'clock before we got home.
718. I gather from that it would be somewhat inconvenient for you to go and report the matter to any colliery official? Yes, it would be inconvenient, and "bachelors" have not much time to run about at that time of night.
719. But you say you would have reported it if there had been anybody in charge of the mine? Yes.
720. Where did you get the touch-paper to fire the shots? Well, we generally got it from Millwood.
721. *Mr. Owens.*] You know the western door? Yes.
722. In the event of that door being opened, would it have any effect on the ventilation? Of course it would.
723. Did you ever notice it affected by that door being opened? No.
724. Have you seen the Government inspector in your heading? No.
725. You never saw him there? No.
726. How long have you worked in the mine? Five or six weeks before the strike, and after the strike, up to the time of the explosion.
727. And during all that time you never saw the inspector there? No.
728. How often did you see gas in the heading? We did not see it at all until we struck the roll.
729. *Mr. Jones.*] You stated that in exploring No. 1 heading you did not observe any burning on the bodies? I did not.
730. Did you carefully examine them? I believe Westwood was a little burnt; he belonged to No. 2 heading.
731. Did you carefully examine the other bodies? No, I did not know them; I only examined Jerry Westwood.
732. They may have been burnt as far as you know? Yes.
733. Have you any knowledge of the position of the driver who was found there? No, I did not see the boy.
734. And you were not there when he was found? Yes, he would be in the heading when I was there, but I did not notice him.
735. Did you notice whether the blower that you speak of arose from a crack in the coal? It was a long way back, and it was in the coal.
736. You stated you consider No. 1 heading perfectly safe to work in, provided no gas was found in the bords or anywhere else in the pit? Yes.
737. Are you aware that dust plays a part in an explosion? Yes; I have heard of it.
738. Do you know it of your own knowledge? No.
739. Do you consider the Bulli mine a dusty one? Well, it is dusty, but not nearly as dusty as I have seen mines at home.
740. You would not have considered it safe to work with a naked light under these circumstances? No; it was not safe.
741. Was it a safe thing to work near the caution-board with a naked light? Yes, if there was no gas there.
742. The danger board was put there to prohibit the driver from taking his light inside? Yes.
743. Was it not usual for the driver to hang his lamp on the prop? Yes.
744. He was allowed to put it there? He often did so.
745. He did not hang it there for the special purpose of showing you a better light? I believe it was hanging there before. I asked him to put it up a little higher.
746. Did you ever use a naked light in turning away a bord? No.

747.

747. Would not bratticing up the heading from the stenton be a safe mode of preventing an explosion? Yes, it would.
748. In your opinion this should be done? Yes.
749. Would the bratticing of No. 2 heading have rendered the bords in the vicinity safer to work in? Well, I would think that if there was a quantity of gas in No. 2 heading naked lamps should not be allowed to be used in the bords off the headings.
750. I want to know if bratticing would be a safer mode of working? It would have rendered the bords off No. 2 heading safer to work in with naked lights.
751. *President.*] In what way? It would have kept the gas out of the heading and the bords. Sometimes when you go into a heading where there is gas, it clears away after you start to work, especially if there are only a few yards of gas there. That gas comes out, and it is liable to be taken into the bords which receive the return air; whereas if the heading was bratticed the gas would have been swept away as it was made.
752. *Mr. Clarke.*] Were you working in the gassy section before the strike? Yes.
753. Where? In the straight in heading.
754. How long did you work there? Five weeks.
755. Was there any gas there at the time? Yes, there was gas, but not until we touched the stone; then Hobbs and Beckton came to turn the stenton away, and that is where we got the most gas.
756. Any quantity? It would take the lamp 2 feet from the top.
757. Were you allowed to work on? Yes; up to the time of the strike.
758. Was gas found anywhere else? I believe there was gas found in the left-hand heading.
759. Have you ever been supplied with a copy of the rules? No.
760. Did you ever ask for them? No.
761. Did you ever make yourself acquainted with them? No.
762. Is this the first mine you worked in in this Colony? Yes.
763. Did it not strike you to inquire for a copy of the rules? We were strangers, and it did not strike us.
764. Did you know that there were any rules issued by the manager? I knew nothing of the rules of this colliery, but I knew the rules that existed at home.
765. And you do not know whether they are similar to rules in England? No; I did not know that it was the duty of the management to supply the rules.
766. With reference to the reporting of this firing of gas which took place on Tuesday night, were you deterred from reporting it by any other reason than that you did not consider it of sufficient importance? No; no other reason.
767. Do you know of the existence of these rules of employment? Yes.
768. You know the rule No. 6, having reference to interference by employees? Yes.
769. That did not deter you? It did not.
770. If you thought there was any immediate danger you would have gone straight away and reported it? I would. I do not think anybody would say anything if I had done so.
771. You do not think anything would have been said to you? I do not think so.
772. *Mr. Croudace.*] In answer to a question from the President, I think you said that an unlocked lamp was quite as safe as a locked one. Do you mean in your own hands? Yes.
773. Do you mean to say that in the hands of all the miners you would have felt it safe? No, I would not.
774. Would you think it better to lock them? Yes, if they were used throughout the mine.
775. You said you had worked five or six weeks before the strike, and a few weeks after the strike, and you had never seen the Government inspector in the mine? Not to my knowledge have I seen him.
776. Was it not possible for the inspector to be around a number of times and yet not to have come in your particular shift? I never saw him.
777. But was it possible for him to make four or five visits without seeing you? Yes, quite possible.
778. You have told us that a portion of air goes through the western door; was that a sliding door? I do not think it was a sliding door.
779. Was that door attended by a trapper? Yes; I believe there was a boy there.
780. When the air goes round there, is it conducted between Nos. 1 and 2 headings, and just after you turn into No. 1, is there not a door on the main road between Nos. 1 and 2 headings, and was that door attended by a trapper? Yes; there is a door there, and it is attended by a trapper.
781. How were the stoppings built? They were built of stone and slack.
782. Were they thick and closely packed? I do not know their thickness.
783. Do you know the measurement of the air at your heading? No.
784. This caution-board was half-way across the stenton in the heading? Yes, about half-way.
785. Do you know the turn leading from Nos. 1 and 2 headings? No; their coals came out of their own heading.
786. Would it not be safer if the caution-board had been on the out bye side of the stenton? Well, it would, especially if any one came through the stenton with a naked light.
787. Then that would be safer? Yes.
788. To the best of your belief, from your knowledge of gas at home, do you think there was such a quantity of gas in the heading to make you specially or extraordinarily careful? No, there was not.
789. Have you seen two or three times as much gas in a heading at home? Yes; there was very little gas in the heading, until we got the stone.
790. And it was your feeling that the deputy knew as much as you did about it, and that there was no necessity for you to report it? Yes.
791. Coming along No. 2 heading there is a diagonal cut through, from which the tubs have been taken as an easier way out to the main road;—was there a door there? I do not know; but I do not think there was.
792. If there was a door left open there, would it affect your ventilation? It would take it all off.
793. You have said there was deficient ventilation sometimes at night? Yes.
794. Was there a night furnace man? I could not say anything about the furnace at all.
795. Was it deficient in quantity? Sometimes there was not as much as usual.
796. You are clearly of opinion that No. 6 rule of this agreement between the management and employees did not in any way prevent you from reporting a blower of gas, or any extensive quantity of gas being found in your heading? No, it would not stop me from reporting it.

Mr. C. Hope. 10 May, 1887.

797. I will read the rule to you: "*Interference by Employees*—Any employee interfering in any way with the orders issued by the Colliery Manager or his over-man for regulating the work of the mine, shall be liable to dismissal without notice." Does that apply to reporting of gas? No, I do not believe it does.
798. *Mr. Jones.*] You say that the stoppings were composed of slack and stone? Yes; they were built of stone, and stone with slack between the two walls.
799. Do you think that stoppings of that character are the best? I would prefer brick before slack and stone; but I believe stone is good enough if properly cemented together.
800. In the event of a blast similar to this, would the stoppings not be more effective if they were properly built up at the back? Of course it would take a larger force to knock the stoppings out if they were so constructed.
801. *Mr. Owens.*] Were you always employed on the night shift? No.

Allan Black sworn and examined:—

Mr. A. Black. 10 May, 1887.

802. *President.*] You are a miner? Yes.
803. Employed in the Bulli mine? Yes.
804. How long have you been employed there? Twenty-three years or better.
805. Have you been employed in any other mine before coming to Bulli? It is twenty-three years since I came to Bulli, but twice, since that time, I have been employed in Newcastle.
806. Did you follow the occupation as miner at home? Never.
807. Your experience is confined to the Colony? Yes.
808. Where have you been employed in the Bulli Colliery? In the 4-foot seam for the last two years.
809. Were you working there on the day of the accident? Yes.
810. When were you apprised of this sad accident? About 3 o'clock on the day of the accident.
811. Who informed you? Someone came in and told us to come out, that an explosion had occurred in the big seam.
812. A messenger was then sent in to warn you? Yes.
813. What did you do? I came out, and went into the big seam with Spinks and with two men named Woods and Charlesworth.
814. Did they also work in the 4-foot seam? Yes.
815. Then you would follow Hope, Scott, Chalmers, and Lang? Yes; they went in before us, I think.
816. Where did you see them? When we first went in we went to the bottom of the incline, to where the overcast was blown down.
817. It was not drawing? It did not draw; it was in connection with the old furnace. We came back, as we could not get over the big fall, and afterwards, in the middle of the horse road I met Lang, who was overcome by the effects of stythe. A little further on we met Chalmers, who went out for some canvas. We afterwards put that canvas a little beyond the centre of the incline, on the left-hand of the heading.
818. Was the stopping where you put the canvas blown in or out from the road? It was blown into the main way.
819. When you first went into the mine you were stopped by the large fall? Yes.
820. Did you notice the stopping blown out almost at the foot of the fall? No, I believe it had been repaired. There was some canvas sent up to put on the western junction. When I got there Spinks took bad, and asked me to come out with him. I then left the canvas with Colton and came out with Spinks. Afterwards I returned and overtook the party.
821. Did you observe any bodies on top of the bank? Yes, the six bodies that were found there.
822. Did you closely inspect them? I closely inspected one, I think it was Bourne, but I could not positively say; I put my hand three times round his head, and found that the hair was short. I could not say whether it was cut short, or whether it was burnt short.
823. Did you see any marks of burning about his face? I did not notice any; his hair appeared to be shorter than usual, and I knew him well.
824. Did you notice any of the others? Well, the young man, Felix Bourne, looked as if he had no hair on his head.
825. How were they lying? When I went up the second time they had been laid out, and sheets put over them.
826. How were their heads when you saw them first? I believe Melville was lying with his head into the main road; Jackson was lying in an opposite way. There are two props just at the western junction, one man was on one side and another on the other, and the other bodies were on the western road.
827. Then you came out? Yes, and we did not proceed further that night, except to see the fall beyond the western.
828. That fall arrested your progress? Yes.
829. Was the atmosphere very thick? It was at first, but it cleared a bit afterwards; but when we first went in nearly all the ventilation was going through the stoppings. When we got the canvas up we could get further along.
830. When did you return to the mine again; or, rather, how long after the accident did you arrive at the western junction? About two hours.
831. What time did you return on Thursday morning? We went in about 6 or 7 o'clock.
832. Where did you go? Over the fall, inside the junction.
833. It is a high fall? I do not call it a fall, as it consists only of stuff that has been stowed on top of the timber sets.
834. Some men had been there during the night and partially restored the ventilation? Yes; there was a strong current going to the western junction.
835. You then went into No. 1 heading? Yes, to where they were bringing bodies on to the main road, and I was helping to carry them from the main road. There was another party ahead of us.
836. Do you know anything about the Hill End district? Not after the district had passed over the fault.
837. So all you know is from hearsay information? That is all.
838. You cannot speak positively of your own knowledge? No.
839. Have you completed your narrative? Yes.
840. Have you any other statement to make as to the condition of the workings? No.

Mr. A. Black. 10 May, 1887.

841. *Mr. Hilton.*] You know the door near to the furnace leading to the 4-foot seam? Yes.
842. When that door is open does it make any difference to the ventilation going to the Hill End district? There are two doors there, and I forgot to state that one of these doors was blown out, at least one of the boards of the door was knocked out, and I went in with Mr. Ross to repair that door; that is the door placed at the division of the two mines.
843. Were these doors partially damaged? One was blown open, and one of the boards was blown off the door, and the hinges were damaged.
844. Was there anything the matter with the other door? It was only very slightly damaged.
845. Was the ventilation escaping through these doors at the time? Some of the ventilation was going that way.
846. Would not these doors, if opened, cut off the ventilation from the Hill End district? No. It could not interfere with the Hill End district, but it would cut off the ventilation from the 4 foot seam.
847. *Mr. Owens.*] You never worked in fiery mines in the old country? I said I had never worked in the old country at all.
848. *Mr. Jones.*] You say you found the overcast blown out? Yes, that is the overcast of the old furnace. It has no connection with the new furnace. The witness then withdrew.

WEDNESDAY, 11 *MAY*, 1887.

Present:—

DR. ROBERTSON, PRESIDENT.

MR. O'MALLEY CLARKE,	MR. NEILSON,
MR. CROUDACE,	MR. OWENS,
MR. JONES,	MR. HILTON.

John Richards sworn and examined:—

Mr. J. Richards. 11 May, 1887.

849. *President.*] You are a miner? Yes.
850. How long have you been a miner? For twenty years.
851. Have you been engaged for that time in the Colonies, or in England? In England for the greater part of the time. I have been nine years here.
852. In what part of England were you engaged in coal-mining? In Lancashire.
853. As a miner in that country, are you acquainted with the presence of fire-damp in the mines? Yes, I have worked with safety-lamps, and know what gas is.
854. In what district in the Bulli Colliery were you prior to the accident? I was working in the gassy seam.
855. Were you working at Bulli before the strike? Yes.
856. That was under the old system of ventilation? Yes.
857. How long has the gassy district been working? It is two years since they first struck it.
858. On passing through a whin dyke you came to the gas? Yes.
859. Did you use safety-lamps before piercing the dyke? As I have said, we found the gas after winning the dyke.
860. Did it give off more gas than before? Yes.
861. So much so that it was deemed expedient to use safety lamps only? Yes.
862. Were you one of the explorers? Yes. I went in along with the first party—Scott, Hope, and others.
863. And you found a large fall in the main tunnel that prevented you from proceeding in that way, and you had to go round by the slacky road? Yes.
864. And there were other falls in the main tunnel beyond the point where the horse road strikes the main tunnel? Yes.
865. The explosion occurred on a Wednesday afternoon, about half-past 2 o'clock;—is that so? Yes.
866. Where did you reside? At Bulli, near the Oddfellows' Hall. I was working on the night shift, and was within 5 minutes' walk of the pit when the accident happened.
867. In what part of the mine were you working? I was working in No. 3 heading.
868. Did you continue the work of exploring the mine until all the bodies were recovered? Yes.
869. That is, you took your regular shift? Yes. I was not at home many hours, although I was bad after being in the first time. I went home till 3 o'clock the next morning, but stopped there all the time after that. We found Felix Bowen's body first, on the bank-head, at the top of the incline.
870. Did you specially examine his body? I just put my hand to him. He appeared to be badly burnt, as the skin was peeling off.
871. Who did you find next? We found the bodies of Luke Jackson, Tom Melville, and others.
872. You found several in a group there? Yes.
873. How many were there? I think there were three lying there altogether.
874. Did you observe the condition of the remaining men? Yes; they were burnt very badly. I got hold of Felix's trousers, and they pulled to pieces like a bit of paper.
875. Did you notice his hair? No, I did not notice much about his hair.
876. Would you not, as one accustomed to fiery mines, take notice of the hair first in a case of that kind? Well, I was very bad at the time.
877. And you returned on the following morning at 3 o'clock? Yes.
878. At that time was the large fall inside the junction cleared, so that you could get over it? Yes.
879. Had the ventilation been restored by that time? Yes.
880. On your first going into the main tunnel what was the condition of the atmosphere? It was very bad.
881. In what way? Well, when I first got in there was no air at all travelling up Hill End. The after-damp was making towards the grip, and we had to wait some time before we could proceed.
882. Could you smell the after-damp? Yes; it was very thick.

Mr. J. Richards. 11 May, 1887.

883. Well, on the following (Thursday) morning what did you do? I went into No. 1 heading and No. 2 heading, and helped to carry out the bodies.
884. Before getting to No. 1 heading did you pass any bodies on the road? Yes; they were carrying them out.
885. A party had preceded you, and were carrying the bodies out? Yes; and there were the bodies of two boys found there.
886. Did you see any of the bodies lying in No. 1 heading where they had fallen? Yes. They were strange men, and I could not recognise them; but I saw Millwood back against the bord end.
887. Do you know the number of the bord? No.
888. Did you go up to the top of No. 1 that day? No, I did not go right into the face.
889. What were you engaged in doing? I helped to carry some of the bodies out of the road; and also to carry them outside from the main road.
890. Did you ever work in No. 1 or No. 2 headings? Yes, I worked in both of them before the strike.
891. Did they give off a considerable quantity of gas? Yes.
892. A dangerous quantity? Yes.
893. Did you work with safety lamps consistently? Yes.
894. You never used open lamps? No.
895. Did you ever see any open lamps used in that district before the strike? Well, they worked in a bord off No. 1 heading with a naked light.
896. Were you in those bords before the strike? Yes.
897. Did you see any gas in those bords? No, not accumulated.
898. Did you see any at all there? I have heard bits of blowers occasionally.
899. Did you ascertain what those blowers discharged? Yes, I have gone round the bord, and tried it with my lamp, and have seen it show in small quantity.
900. But the headings discharged a greater quantity, you say? Yes.
901. In driving these headings I believe you passed over a considerable number of rolls? Yes.
902. And on approaching the rolls the coal gave off a larger quantity of gas? Yes, because there were more facings in the coal on top of the store.
903. Have you worked in No. 2 heading? Yes, I did before the strike.
904. Did it give off more gas than No. 1 heading? No, I think it gave off about the same quantity; but if there was any difference I think No. 1 gave off the most.
905. What was the course of ventilation to No. 1 and No. 2 headings? It came on to the main road, and through the cross-cut.
906. It came from the main tunnel up to the heading? Yes, up No. 1 heading through the cross-cut, into No. 2 and out of No. 2 heading into No. 3; there was no air course through the bords.
907. When the bords got in a sufficient distance for cut-throughs, the air would go round the bords, would it not? No, I never saw any round the bords.
908. Then how were the men in the bords supplied with air? By the skips passing, and the like of that.
909. The object of cut-throughs is to take the air so much nearer the face? Yes, in the headings.
910 But I am talking about the bords? I do not know about cross-cuts in the bords.
911. But we are talking about the bords. What is the object and intention of cut-throughs or stentons? The object is to carry air from one heading to another.
912. Then the air was directed up No. 1 heading, passed through a cut-through into No. 2 heading, and from that it supplied the men working in bords off No. 2 heading;—is that not so? It would strike up to them no doubt.
913. Where did the men in No. 2 heading get the air from; was it not by means of the cut-through from No. 1 heading? Yes.
914. Then as the air passed into No. 2 heading by that channel, it supplied the men in the bord, and passed down to the tunnel again? It was supposed to have supplied them.
915. Were they supplied? I cannot say.
916. Then if they had no air how could they exist? I suppose they were supplied by the air driving up from the heading.
917. You said just now they were "supposed" to get it from there; where could they get it but from there? I do not know where else they could get it.
918. Then why not have said so at once. You have said that you worked in this heading before the strike; was the ventilation of sufficient strength there? If it was kept up to the face it was.
919. Well, was it kept up to the face? No.
920. How was it arranged? There were cross-cuts put through with perhaps a distance of 40 yards between.
921. Are you quite certain of that? Yes; the heading that I worked in last was fully that.
922. I am talking about No. 1 and No. 2 headings. Have you seen any cut-throughs in No. 1 and No. 2 with 40 yards of coal between? I never measured them.
923. Then why did you make that statement. I warn you to be very careful to give accurate replies to questions. If you make a statement to me that there were 40 yards of coal between the cut-throughs, I am bound to believe you; but if you say 40 yards, and mean 30 yards, you are speaking wide of the truth? I am telling you nothing but the truth.
924. Are you certain as to the distance between the cut-throughs? As I have said, I never measured them.
925. Then why did you state a particular distance? I am only speaking of what I was working in.
926. Well, what was the distance between the cut-throughs? I cannot say.
927. Was there any bratticing taken up to the face? No.
928. Would you think that a judicious course to pursue? Yes.
929. In that case the brattice would take the ventilation from the last bord, conducted up to the face, and sweep away the gases accumulated there? Yes.
930. It would prevent the accumulation of gas? Yes.
931. Did you work with safety-lamps in those bords before the strike? Yes.
932. Were they locked? Yes, before the strike they were.
933. Were they locked in all cases? There was a time, just at the start, when they were not locked; but afterwards Mr. Crawford locked every one.

934.

Mr. J. Richards. 11 May, 1887.

934. Did you work at night-time? Yes.
935. And did you work with your safety-lamps locked in the night shift? No.
936. Was there any greater danger in the day shift than in the night shift? No, not that I know of.
937. Then, as the danger was as great during the night as in the day, can you give any reason why the lamps were not locked at night? Well, there was no one there to lock them.
938. After you resumed work since the strike, did you notice any improvement in the ventilating current? Yes, I believe there was an improvement in the amount of air.
939. In your opinion, as an experienced miner, had brattice in any shape or form been taken up to the face after the strike;—could any great accumulation of gas have existed? Not in the headings, certainly.
940. The air thus carried down would have swept it away? Yes, it would.
941. After the strike did you go into the face of any of the bords? Yes, I did in one bord, in No. 4 heading.
942. You worked in Nos. 3 and 4 since you resumed work? Yes.
943. But you cannot speak as to the condition of the bords in Nos. 1 and 2? No.
944. Since you resumed work have you continued the use of safety-lamps? Yes.
945. Were those lamps locked? No, not since.
946. We have been told that the lamps were locked for a period after the resumption of work, but that the practice was discontinued. Do you know anything about that? On the first night that I started to work in the gassy section after the strike, I went to get my lamp at the cabin. Millwood gave me a lamp, and he locked it. I asked him how I should be able to get a light if the lamp went out. He said that we should have to go outside and get the key to unlock it; but afterwards he remarked that it would be no use locking the lamp if he gave me the key, and he asked me for the lamp back again, so that he could unlock it. I did as he directed me, and he never locked the lamp after that.
947. Was an unlocked lamp in your hands as safe as a locked lamp? Yes.
948. You know the danger of gas? Yes.
949. How did you work the coal in these headings? We used to hold and shoot it.
950. Did you nick it? Sometimes, not always.
951. Would nicking the coal have assisted the shots? Yes; but it was not always pursued.
952. Did you use compressed powder? Yes.
953. Was it a custom in the mine? Well, some used loose powder.
954. How did you fire the shots? We lighted ours with a match.
955. How did you stem the holes? With a little of the "bad" off the roof that was slightly damp.
956. If you were informed that some of the men tamped with small coal, would you consider that in the presence of gas as safe as the material you used? No, because I know there is a lot of spar in that coal.
957. How did you apply the light? I went back to my waistcoat, and struck the match.
958. Do you mean a lucifer match? Yes.
959. And you adopted that means of lighting the shots whilst working with Davy lamps? Yes.
960. Yet you are an experienced miner, and know what gas is? Yes; but we had no gas in our place at all.
961. Then are you referring to Nos. 3 and 4 now? Yes.
962. When you were working in Nos. 1 and 2 headings, how did you light the shots? With touch-paper.
963. And how did you apply the light to the paper? We tilted the lamp, and got the flame to beat against the gauze.
964. Did you think that a safe operation; would you have done that in England? Well there was always a man to light them where I was in England; they used a piece of wire.
965. Was that a safer method? It was as safe.
966. I suppose the large quantities of gas met with in the collieries of certain districts in England would teach people safe modes of firing shot? Yes, I suppose so.
967. There would be some reason for the adoption of that method in firing shots? Yes.
968. Probably on account of the increased safety. Do you know that firing shots by means of a wire is safer than the operation of tilting the lamp? I believe it would be safer; but we never fired a shot in the presence of gas all the time I was in.
969. Then in Nos. 3 and 4 headings, those that you worked in since the resumption of work, have you seen any gas in those places? Not accumulated anywhere in the headings.
970. Had you ever been in No. 3 and No. 4 headings before the strike? I never worked in them, but was in them many a time.
971. Did you ever see gas in Nos. 3 and 4 headings before the strike? I have heard of it, but never saw any.
972. But since the strike you can speak positively as to the condition of those headings? Yes.
973. Have you seen gas there? I have known traces of it, but never actually saw any in the headway.
974. You considered it safe enough to strike a match, and fire your shot? Yes; Millwood and all of them knew it.
975. Indeed; that is what you say, but is Millwood here to answer it? No.
976. Judging from the condition of the heading you worked in, had you any reason to fear an explosion? Well, no; I never thought there would be such an explosion as that.
977. You have gone carefully over the roads since the explosion? I have.
978. Have you noticed evidences of the explosion in the shape of charred props, and burnt bodies, and coal dust, and such like? I noticed a charred prop lying in a bord close to the side of No. 3 heading.
979. Was it only black, or was it charred? It was charred, I think, but I did not handle it to see.
980. There is a difference in a charred prop and one that is merely black; at all events you saw evidences of an explosion? Yes.
981. Have you satisfied yourself that an explosion did take place? I have.
982. Do you know how coal dust behaves in the presence of gas that is exploded; have you any personal knowledge? No, I never read anything about that; but I think it would require a large quantity of gas to pick it up and fire it.
983. Did you make any reports to the Deputy since resuming work as to the advantage or otherwise of having the safety-lamps unlocked? No.
984. You did not consider it mattered, so far as you were concerned, whether you had Davy lamps or not? I did not consider there was any danger of gas where I was working; in fact I knew there was no gas.

985.

Mr. J. Richards. 11 May, 1887.

985. Then there was no danger in your place from gas? No.
986. *Mr. Hilton.*] You say that the after damp was making towards the grip? Yes.
987. Can you give any reason for the after-damp going towards the grip? No, only this—that it was the explosion going out that reversed the air.
988. Did you ever work in the western district? Yes.
989. Was that before the strike? Yes, a good while before.
990. Are you acquainted with the return air-ways in the western district? No; I have not been through the return for a long time.
991. You know the door on the western road—at the western junction? Yes.
992. Did you ever know that door to be damaged by the set or any other cause? Not that I know of.
993. Have you ever in the old country worked in a dusty mine that gave off gas? I have worked in mines as dusty as this that gave off gas.
994. Did you ever work in mines that gave off gas, and which in your opinion were dustier than Bulli? No; but I have worked in dustier mines that did not give off gas; the mines I worked at in Lancashire were as dusty as Bulli.
995. You say you worked in the western district; supposing the road was blocked up, by what means would you get out? I do not know, unless we got through to the grip.
996. Do you know that you could get through that way? No; I do not know that we could get to it.
997. You know the overcast from the gassy section in the western district? Yes.
998. You are aware that that is the return road to the furnace? Yes.
999. Supposing the road was blocked up as I have described between the junction and the working face, I presume you would endeavour to get that way out? Yes.
1000. But you do not know whether you could get that way in the event of an occurrence of that kind? No.
1001. *Mr. Owens.*] Was the deputy aware of the method you employed to fire the shots? Yes.
1002. Did you at any time have gas in the western district? I never did; I did hear rumours of it, but I cannot speak of my own knowledge.
1003. *Mr. Jones.*] Were you ever supplied with a copy of the special and general rules for the guidance of the men while you were at the colliery? I do not recollect having one.
1004. You surely know whether you received one or not? Well, I believe I did get one.
1005. Can you point to the particular spot where Millwood, the deputy, was found? I did not take particular notice whereabouts he was found; I know I helped to carry him out.
1006. Was he found anywhere near to the last stenton? Yes.
1007. How far, in your opinion, from that stenton? I do not think he would be above 10 or 15 yards from the stenton.
1008. You have stated that the lamps were not locked during the night shift? Yes.
1009. Did you say that they were locked during the day? Yes, before the strike.
1010. You were employed at nights then? Yes; I worked nights and days—week about.
1011. Are you sure, of your own knowledge that the lamps were all locked during the day shifts? Every one was supposed to go to Crawford to get his lamp locked. I have seen him lock scores of lamps.
1012. You have stated that an unlocked lamp in your hands would be perfectly safe? Yes; it would be perfectly safe with me, because I should not take the top off where there was gas.
1013. Have or had you the same amount of confidence in the other workmen? No.
1014. Then you think it a wrong proceeding to allow all workmen indiscriminately to use unlocked lamps? I do.
1015. From whom did you receive instructions, if any, as to the mode of firing your shots? We did not receive any instructions; every one had to fire his own shots.
1016. Who supplied you with touch-paper? We supplied ourselves.
1017. Then you had no definite instructions as to how the shots were to be fired? No; Mr. Crawford found us some touch-paper before the strike, but since the strike we all had to find our own.
1018. *President.*] At least the deputy did not find it for you? No, sir.
1019. *Mr. Jones.*] When you first entered the mine you found it impossible to get beyond the big fall? Yes.
1020. Now I should like you to consider this question—which may be taken in connection with Mr. Hilton's questions—very carefully. Do you not think it necessary that there should be a second outlet, so that, and by means of which, the men would be enabled to get to the light of day in the event of a large fall taking place? I do.
1021. You say you have seen gas in small quantities in the working bords? Not accumulated there. I have seen little bits of blowers in the bords.
1022. Which satisfied you, I suppose, that gas was present? Yes.
1023. Did you work there with safety-lamps? Yes at that time, before the strike.
1024. *Mr. Clarke.*] Have you formed any opinion as to the particular spot where this explosion could have originated? No, I cannot tell.
1025. Could you localise the centre of the mischief in any way. Have you formed any opinion or theory on the subject? No, I cannot give any idea where it originated. It is supposed to have happened in No. 2 heading, I believe; but it is hard to say.
1026. You have no opinion of your own? No.
1027. How often did you see the overman, Mr. White, during the time you were working in No. 1 and No. 2 heading before the strike? Well we might see him every three or four days, or we might see him oftener.
1028. When he paid you these visits were you in the habit of drawing his attention to the presence of gas? Sometimes when he came in he would say, "Well, boys, is there any gas about?" and I have said many a time, "Yes, there is gas back here," and I have shown it him in the roof.
1029. He was very well aware of the presence of gas there? Yes. He would sometimes tell us to be careful till we came to the next cut-through.
1030. Going back to a former question, did you not say at the inquest that you thought the explosion had not originated in No. 2 heading? Yes I did, on account of the tubs being blown through on the flat.
1031. Then you did form a theory of your own? To that extent I have. I think if the explosion came in that direction it would not have blown the tubs about as they were found.

Mr. J. Richards. 11 May, 1887.

1032. Where, in your opinion, is the most likely spot for the explosion to have originated? I think it might have originated in the straight heading; there were men working there with safety-lamps, or somewhere in the western.
1033. Are you still of opinion that it did not originate in No. 2 heading—have you abandoned that theory? Well I cannot give any further idea of it.
1034. Well would you rather not express any opinion? Yes, I would rather not express any opinion.
1035. *Mr. Croudace.*] I should just like, in the first place, to fall back on the question asked by Mr. Hilton. Supposing the return air-way from the western district to be blocked up, and this explosion to have occurred, do you know if there was any return air-way from the western district to the furnace? Not that I know of; but I should think there must have been a way for the air to go.
1036. You do not know? No, I have never been that way.
1037. Can you say whether the miners in the colliery made their monthly inspection of the mine? I do not think they did. I never heard of it.
1038. To come to the ventilation of this mine. In going direct from the tunnel do you know if there was a door placed at the entrance of the western district? Yes.
1039. Was it a slide or a scale door, or a fly door? I have heard there was a slide there.
1040. Have you been through it? Yes, scores of times.
1041. How did you open it? I pulled it.
1042. Is that a slide door? No, it pulled open in the ordinary way.
1043. Was that door closed when you went through, or partly open? It was closed—that is we had to open it to pass through.
1044. It was not propped open—there was no scaling? Not that I saw.
1045. Did you ever see a trapper boy there? No; I never saw one.
1046. If there was no boy there, who opened the door to allow the sets to go through? There was always somebody there when the sets came out.
1047. That is somebody who attended to the door? Yes.
1048. Then why not have said so at first. Leaving that door, and coming along to No. 1 heading, was there a door between No. 1 and No. 2 heading? Yes, there was a door between Nos. 1 and 2 headings.
1049. On the main engine brow? Yes.
1050. Did any one attend to that door? Yes, a boy.
1051. Was there a door at this diagonal cut-through? I believe there was.
1052. Can you say whether a boy attended it? I cannot speak with certainty.
1053. Then, coming to No. 3 and No. 4 headings, was there a door there? Yes.
1054. And was there a boy in attendance there? I do not think there was.
1055. Are you positive? Well I never saw one; there was not much traffic through it.
1056. Have you ever been in the return from the face in No. 5 up to the western district? Yes, but it is a good while ago.
1057. Now, just for one moment let me refer to the question of locked and unlocked lamps;—did you ever remonstrate or make any suggestion, either to the lampman, the overman, or the deputy that all the lamps ought to be locked? No, because when we knocked off on strike we were all working with safety-lamps, and when we started again they gave us naked lights.
1058. Did you not consider it unsafe for others to have their lamps unlocked? I did not think much about it.
1059. As a prudent man of some experience, do you not think it would have been a judicious and proper thing for you to have remonstrated about the unlocked lamps? I did not think it was any of my business to interfere with the deputy's duties.
1060. Would it not have been a prudent and fairly right thing for you, as a prudent man—when you found that other men whom you say you could not trust were using these unlocked lamps—to have remonstrated about it? Well I cannot say; the men who worked in these headings were supposed to be practical men.
1061. Yet you say you could not trust them? I meant to say that I would not put much trust in unlocked lamps if all the men in the pit were working with them. But there were only a few working with them at Bulli.
1062. You have said that you could trust yourself but not others. Would it not then have been in your own interests to have seen that all the lamps were locked; in fact would it not have been only reasonable for you to have suggested to some one, even your fellow-workmen, that all the lamps should be locked? I believe they ought to have been locked.
1063. Then why not have suggested it? It was not my business.
1064. It was certainly not your business to jeopardise your own life? I did not think it would interfere with us. That is, I thought there was not sufficient gas in the pit to trouble any but those who lighted it.
1065. I am quite satisfied with that. I do not want you to think I am putting you in a corner. My object is to show that we may learn a lesson from the past for our guidance in the future. You, for instance, will be imbued with the feeling that all lamps ought to be locked in gassy mines after this. Did anything else, beyond the belief that there was only a small quantity of gas in the mine, prevent you from making that suggestion to any one? Well if I had known that there was any danger where I worked I think I should have reported it.
1066. You would not have felt yourself prevented reporting by any rules of the colliery? There was a rule, No. 6, I think, that when the men signed it they thought they were signing their liberty away.
1067. Have you read it? Yes.
1068. Is there anything there to prevent you reporting anything that appears wrong to you, as you go out of the mine? It says nothing about reporting; but it says the men are not to interfere in the management of the mine in any way.
1069. The rule is very plain and simple; it says that the employees shall not interfere with the orders for regulating the working of the mine. Now can that possibly be construed or twisted into meaning that the men are forbidden to report upon a dangerous state of things, either as to the roof, an influx of water, the presence of gas, or anything else? Yes, it does, in my opinion, mean that.
1070. Explain how? Supposing I had lodged a complaint about the absence of bratticing, say, do you not think that would be considered interfering? I should have been interfering with the management of the work. Supposing I said to the manager, "There ought to be some bratticing up here," he would tell me to mind my own business.

1071.

Mr. J. Richards. 11 May, 1887.

1071. Still, though that be your opinion, you would not call that a correct interpretation of the clause, as to "interference." You would not be interfering with orders for regulating the work, even then; you would be making a suggestion. But is there anything in these rules to prevent you leaving your place and telling the deputy that you apprehend danger from a quantity of gas? It does not say anything about that.
1072. Supposing a blower of gas existed in your working place, do you think you would be prevented by this rule from reporting to your fellow-workmen, or the deputy, or the overman that such had taken place? You see it does not meet with reporting gas.
1073. Answer the question, please. Do you believe in your heart that that simple rule, No. 6, which merely refers to the regulation of the working, could be held to prevent you going into your fellow-workmen and informing them, as also the deputy and overman, that a sudden blower of gas came into your heading? Well, sir, as to reporting gas, I do not know; but if I had gone and told the boys that there ought to have been some bratticing up, which we all knew there ought to have been, would it not have been considered that I was interfering with the overman's work?
1074. Certainly not? Well, that is my opinion.
1075. It would not have prevented you giving information. But the real fact is that you thought the gas would only affect the men that happened to fire it. Is not that so? Yes, I did think that, certainly; but I can see now that there must have been some gas besides what was in the heading to do so much execution.
1076. Did you see more gas there than you have told us of? No.
1077. Have you ever known more gas in that mine—any part of it—than you have stated on oath? No.
1078. Do you know of anyone in the Bulli mine who has ever seen a great quantity of gas in any part of it, and if so, will you give me his name and address? No, I do not; but I have found a body of gas there before now.
1079. I am speaking of a large accumulation of gas. Do you know of anyone who whether rightly or wrongly, has stated that he has found a large accumulation of gas there—either in a heading or place of any kind—because, if such is the case, I will endeavour to ferret it out. Do you know of any such, either by report or of your own knowledge? I have myself seen a lot of gas in that mine. That was about two years ago.
1080. Keep to within a month or two previous to the explosion? I have never seen any more since than in the heading I have mentioned.
1081. *President.*] Do you think the gas that existed in the mine was known to the men; that is, that no unknown magazine of gas existed there? I do not think any such existed; I think they all knew that gas was in the headings.
1082. *Mr. Jones.*] You have stated that there were no monthly inspections by the miners? I did not know of any.
1083. Do you not have any inspections whatever? No.
1084. You have stated that you did not think there was sufficient gas in No. 1 and No. 2 heading to produce any great effect, and you say you have no theoretical knowledge of the part that coal dust would play in an explosion? No.
1085. If you had been in possession of such knowledge, do you think that would have altered your opinion? I do not consider there is a great deal of dust in that pit. There is no dust lying about the roads.
1086. Can you say what quantity of dust would be required to form any part in an explosion? No.
[*The witness withdrew.*]

Walter Settle sworn and examined :—

Mr. W. Settle. 11 May, 1887.

1087. *President.*] You are a miner, residing at Bulli? Yes.
1088. How long have you been employed at Bulli? It is about nineteen or twenty months since I first started.
1089. Before that where were you engaged as a miner? At Mount Pleasant.
1090. Have you been engaged in mining anywhere else? Yes; in Lancashire, England.
1091. Did you work in gassy mines? Yes; we worked with lamps.
1092. Then you are acquainted with gas in mines? Well, not to a large extent.
1093. Were you employed at the Bulli colliery at the date of the explosion? Yes.
1094. In what part were you employed—in No. 4 heading? In the gassy section.
1095. That is further in than No. 1 and No. 2? Yes, beyond that.
1096. Were you on the day-shift or the night-shift? I was on the night-shift.
1097. Where did you reside? At Woonoona.
1098. How were you apprised of the accident? I was going up to work, and was told of it.
1099. Were you one of the exploring parties? No; they were inside when we got up there, and there were no more lamps.
1100. Then you did not go into the mine? Not on the day of the explosion; we went in on Thursday morning.
1101. Where did you go then? We went as far as No. 1 heading—into a bord.
1102. Were the bodies of the men in the main tunnel removed before you went in? Yes.
1103. Then tell us the story of what you did in your own way? When I went in on the Thursday morning it was with the idea of helping to carry the bodies out. I think I was in as far as the second bord in No. 1 heading, and I never got any further. I was engaged in carrying out the bodies.
1104. After the bodies were taken out were you inside the mine? No.
1105. Have you not been in the headings and seen the state they were in? No.
1106. Then you cannot give us any information as to what happened, the cause of it, I mean? No.
1107. Before the strike, in what district were you employed? In the grip district.
1108. And since the resumption of work where have you been employed? In No. 4 district.
1109. Can you give us any information as to the condition of the district known as the "gassy section" before the strike? I never worked in it; so I cannot speak of it of my own knowledge.
1110. Since resuming work did you work with Davy-lamps in No. 4 heading? Yes.

1111. Have you ever tested for gas in No. 4 in your own place? I never found any there.
1112. Was the ventilating current sufficient to sweep away any gas that might exist? Close to the stenton it was; but not at the face.
1113. You did not discover any gas at the face? No.
1114. Or at any other part of the heading? No.
1115. Did you notice any blowers at any time? No.
1116. Did you hear of any gas having existed there before the strike? Yes; a man who used to come to my house told me about it.
1117. But you have seen none yourself? No.
1118. Was the safety-lamp you were supplied with locked? No.
1119. Then, so far as your heading was concerned, it was a matter of form using the safety-lamps. How did you fire the shots? With a needle and squib.
1120. Did you communicate the flame of the lamp to the squib? No; we used an ordinary lucifer match.
1121. Then it was quite a matter of form whether you used the Davy-lamp or not? Yes; there it was.
1122. Did you consider there was anything inconsistent in using Davy-lamps, and lighting your shots by means of lucifer matches at the same time? Well, of course, it is not usual to take naked lights into a place where you use Davy-lamps.
1123. Then you used it because you had satisfied yourself that no danger existed from gas? Yes.
1124. Had gas existed even in an infinitessimal degree would you have used matches there? No; not if there had been the slightest danger.
1125. Were you particular to examine for gas before firing a shot? Yes.
1126. Did you make any report to the overman or deputy as to the state of the lamps—you say they were unlocked? We made no report.
1127. Were the lamps unlocked in the situations you occupied in England? No; they were locked there.
1128. You did not make any remark as to the lamps being unlocked at Bulli? No; the first night I started there Mr. Millwood locked two lamps, and one of the men asked him what they should do if they got in the dark.
1129. Was that Richards? Yes; I think so. He (Millwood) considered a moment, and then said, "You must go outside, but I do not see what is the use of my locking the lamps if I leave you the key," and so he unlocked them.
1130. Did the danger-board exist then? Not at that time; he would mean us to go outside the stenton.
1131. Did that appear to be a safe course to you? If there was no gas it was safe enough, but if there was gas it was not safe.
1132. Were you special men, and were there special places? Yes.
1133. In your opinion when working in special places are unlocked lamps as safe as locked lamps? The lamps are safe so long as they are not interfered with; of course, if you unscrewed them, it would be quite unsafe.
1134. I suppose you know the principle of safety-lamps is a measure of precaution against danger? Yes.
1135. And knowing that you would not think of unscrewing a lamp where there was gas? No.
1136. Then was it as safe in your opinion in one way as the other? Yes.
1137. And so far as your place was concerned you say there was no need for safety-lamps at all, as proof of which you lit lucifer matches to fire your shots? Yes.
1138. Did you work on the day shift or the night shift on resuming work after the strike? I was working from the 7th of March to the 22nd, and I believe I was one half the time on the dayshift.
1139. Were the safety-lamps unlocked during the day? Yes.
1140. Did you not think there was any necessity for communicating with the deputy on the subject of the unlocked lamps? No.
1141. Had you any conversation with your mates as to the state of the lamps? No; except to state that it was an unusual thing to have the lamps unlocked.
1142. *Mr. Neilson.*] What was the state of the ventilation the month before the strike? I thought there was a very good current.
1143. After the strike did you find any change? Yes; I thought there was a much stronger current of air going.
1144. You knew that the new furnace was going? Yes.
1145. Who was this man who told you about the gas—the man who came to your house? Robert Calland.
1146. Did you ever receive any instructions from the overman or any other person about firing the shots? No actual instructions. One of our men asked the manager if we could use the needle, and he said, "Yes, we could use the needle and straw."
1147. Have you ever worked in any place in the mine where you have been able to detect gas in the safety lamps? No.
1148. *Mr. Hilton.*] Was the deputy or overman aware as to the manner in which you fired your shots? I believe he was. He has been close to where we fired the shots, but never said anything, and whether he took any notice or not I could not say.
1149. Take this copy of the rules in your hand. [*Copy handed to witness.*] Did you ever receive a copy of these rules? No.
1150. Are you sure? Yes; I am certain. I asked for them. I asked the deputy, Mr. Robbins, twice, and he said he would see I got them; but I did not.
1151. *President.*] When was that? When I was working in the grip.
1152. *Mr. Jones.*] I understood you to say you never saw gas in No. 4 heading. Did you get any extra pay for working in No. 4 heading—was there 3d. a ton allowed? Yes.
1153. Then it was considered a gassy heading? Yes.
1154. I think you have explained that notwithstanding that you worked with Davy-lamps, you fired your shots with open lights and matches? Yes.
1155. Was that proceeding somewhat inconsistent with your position in that heading? Well there was no gas, and we thought we were quite safe.

Mr. W. Settle. 11 May, 1887.

1156. *Mr. Clarke.*] Did you see any rules posted up either inside or outside the mine? Not that I am aware of since the strike. I think I saw them before. They were on a prop about 30 yards from the entrance to the mine.
1157. Were they legible—could you read them? Some portions of them.
1158. Did you ever try to read them? I have read some of them, not all.
1159. *Mr. Jones.*] Did you think it a wise precaution to have a caution-board placed at the second stenton back from the heading—that is to say, would it be safer? Yes, certainly.
1160. Would you suggest that as a measure of safety? Yes, it would be better no doubt.
1161. *Mr. Croudace.*] You have stated that you heard of gas in No. 4 district previous to the strike? No; I did not say No. 4 heading; I said it was in the gassy district.
1162. However you have told us distinctly that Millwood took the precaution to lock your lamps; but at the special request of the miners themselves he unlocked them? I do not think I said that.
1163. You have stated that he locked your lamps on the first night, but that on one of your mates asking what you would do if you got in the dark he unlocked them in your presence. Is that the case or not? Yes.
1164. Very well, that being so, is it not the fact that Millwood took precaution to lock the lamps, but at your request unlocked them? We did not request him to unlock them; mine never was locked.
1165. You say that at first Millwood locked the lamps, but that on the representation of a former witness (Richards) he unlocked them, and told you that should they want trimming again you could go outside for that purpose? Yes.
1166. Well that indicates that Millwood showed great caution in locking the lamps. Whether it was prudent to unlock them afterwards is another matter? I suppose it is usual to lock them.
1167. The man is dead and gone. I do not say that he was over wise in agreeing to your request; but it was on your request that he unlocked them? Had he locked them we should have gone to work with them so.
1168. But you induced him? I cannot see that at all.
1169. In answer to a question, you said you were paid 3d. per ton extra for working in the presence of gas. Is not that extra tonnage really for the use of the Davy-lamp? Is it not a matter of precaution on the part of the management in agreeing to pay 3d. extra for fear of gas? Yes.
1170. You think it a matter of precaution? Yes.
1171. Either previously to the strike, or between the strike and the explosion, did you of your own knowledge know of any large accumulation of gas in this mine? The only large accumulation of gas I know of was reported to me the night before the accident by a man that worked in No. 2 heading.
1172. Then you do not speak of your own knowledge? No.
1173. But you have heard of an accumulation of gas there? Yes; I heard the night before the explosion, from a man who was in No. 2 heading, that the gas was up to the danger-board. He told me as we were going home the night before the explosion. That was James Salisbury.
1174. He told you the night before the explosion that the gas extended from the face in No. 2 heading to the danger-board? Yes.
1175. Did he say what distance that was? No.
1176. Did he make any further remark about it to you? He said at the same time, I think, that the driver lit the gas in the next heading.
1177. Do you know of any other report on the subject? No; I do not. [*The witness withdrew.*]

Joseph Poppett sworn :—

Mr. J. Poppett. 11 May, 1887

1178. *President.*] How long were you engaged at Bulli? Up to the strike; not since.
1179. When were you apprised of the accident, Mr. Poppett? In the afternoon; I was in Bulli at the time, and I went up to the mine immediately.
1180. And did you go in? Yes, as soon as I got a lamp I went in, along with another party.
1181. How far did you go? We went to the furnace first; then I came back, and went up the cross-cut to Hill End.
1182. How far did you proceed? I did not go to the bank-head then; it was too hot.
1183. The ventilation was deranged? Yes; I came back.
1184. When did you return again? I returned about 9 o'clock at night, and went into the mine again.
1185. Where did you go then? We went straight to the bank-head, and examined the bodies. Mr. Evans went with me.
1186. Did you particularly examine the bodies lying on the flatt? Yes; I had a brother there in the western.
1187. What position did the bodies occupy? How were their heads lying? Some of them had been shifted then, and wrapped in canvass.
1188. Some one had been there before you? Yes.
1189. Did you go to the fall beyond the junction? Yes, I went to the big fall; there were men working at it.
1190. When did the men get over it? The next day, in the morning.
1191. Did you go over the fall? Yes, carrying the bodies out.
1192. Did you identify the bodies, or had explorers been there before you? I could recognise some of them.
1193. But others had been there before you? Yes.
1194. Who was there before you? I cannot remember.
1195. Was Mr. Green there before you? No; I think I was in the pit before him.
1196. Did you see any of the bodies lying as they were found in the tunnel, or No. 1 heading, or in No. 2 heading? Yes, I saw some that had not been touched.
1197. Where was that? The far end headings; there were two new chums working there.
1198. Did you know No. 1 and No. 2 headings? No, I do not know much about them, as I was not much up there.

1199.

Mr. J. Poppett. 11 May, 1887.

1199. Can you tell us anything as to the condition of the bodies as you found them? Some of them were lying face downwards, and had not been touched at all; some in the bords and some in the headings.
1200. Was that in No. 3 or No. 4 heading? I cannot be sure; I do not know those headings.
1201. Where were you working before the strike? In the western.
1202. Were you working in the gassy section? No.
1203. Was there any gas in the western section before the strike? I never saw or heard of any.
1204. Have you been round the whole of the workings since the bodies were found? I was round the gassy and the western, carrying the dead out.
1205. Have you been round with the managers with the view of ascertaining the cause of the explosion? No.
1206. Did you work with Davy-lamps in the western? No, with naked lamps.
1207. And you met with no gas? No; there was none there that ever I heard of.
1208. *Mr. Neilson.*] Did the body of your brother, after being washed, show any signs of being burnt? No, very little.
1209. What part of the mine was he in? In the western, as you come off the flatt, a good way up. [*The witness withdrew.*]

Wm. Beckton sworn and examined:—

Mr. W. Beckton. 11 May, 1887.

1210. *President.*] What is your occupation? I am a miner residing at Bulli.
1211. Were you engaged at the Bulli colliery at the time of the accident? No, I was not.
1212. Were you engaged at the Bulli colliery before the strike? Yes.
1213. How did you first become aware of the accident? I heard it from a man as I was coming from my work at North Bulli.
1214. At what time was that? It was about 3 o'clock or half-past on the 23rd of last month.
1215. That was some time after the accident occurred? Yes.
1216. Did you go straight up to the mine? I went up after having tea.
1217. Were you one of those who went into the mine? Not at that time; I went in after.
1218. The accident occurred on the Wednesday—when did you go in? I went in on Monday with Mackenna, Hobbs, Mr. White, and the Government Inspectors, Mr. Rowan and Mr. Dixon.
1219. Where did you work in the Bulli mine before the strike? All over the gassy section pretty well.
1220. In what place did you work? We started in the straight heading; then we worked in an airway, following up the main back heading; then we worked in No. 1 left, or No. 6, I think it is, where the back air-way started off. [*Position indicated on Plan. Witness referred to No. 5 heading.*]
1221. Were you working in Nos. 1 and 2 headings? I drilled a hole in No. 1, but never worked in No. 2; I forgot this when giving my evidence before,
1222. Then practically you did not work in No. 1 heading? No, I just drilled a hole there.
1223. Was gas given off in considerable quantities in that district when you were working there? Yes, in the face and on the rib sides—that was on the main heading.
1224. Was there a larger quantity of gas given off in approaching these rolls you were troubled with? I believe there was.
1225. Did it issue from the cracks or joints in the coal? It came in the shape of blowers.
1226. It came out in some force, I suppose? Yes, some of the blowers were stronger than others.
1227. Did you use safety-lamps? Yes.
1228. Were they locked? Yes; that is sometimes before the strike, but not afterwards.
1229. During the day-shift were they locked? I have worked during the day-shift with unlocked lamps.
1230. Can you assign any reason for that? No; I would just go in and get my lamp, and if no one was there to lock it I would take it away with me.
1231. Have you never read the Act of Parliament dealing with regulation and working of coal-mines? No, sir.
1232. Have you not read the special rules dealing with the presence of fire-damp in mines? Well it is so long since I got them that I forget.
1233. Are the rules not posted up at the pit, where you could see them? I have tried to look at them, but they are so high up I could not see with the light there.
1234. Do you know the duties devolving upon you as a miner in working with safety-lamps? No, I can't say that I do.
1235. Rule 16 of the General and Special Rules Bulli Colliery says:—

> "Should it be necessary to use safety-lamps in any portion of the pit, stations will be fixed upon and proper notice boards erected, beyond which no person under any pretence whatever shall take any naked lights, pipes, or matches. From these stations no person is allowed to take a safety-lamp to use in the pillar-workings, broken or waste, without it having been first examined and securely locked by the overman or other person appointed. None but the overman or other person authorized shall carry a safety-lamp key." * * * * *

Do you not remember reading that portion of the rule No. 16? No; I do not remember reading that.
1236. Did you consider that you were incurring any special danger in working with unlocked lamps? No.
1237. You say occasionally they were locked? Yes.
1238. In the majority of cases were they locked? For a while they were; but before the price was settled and the miners came down in bodies to work we never used locked lamps.
1239. Then was the price increased on account of having to use safety-lamps? Yes; we were all working on shift-work at that time, and when the price was settled thirty more men came down there, and I suppose for safety they locked the lamps. I never saw a "safety" key before that.
1240. But after that you say the lamps were locked? Yes.
1241. And was the rule adhered to? They were never locked on the night shift.
1242. Did you receive any special instructions as to the use of safety-lamps in working on the night shift? Not to my knowledge.
1243. What did you in the event of your lamp going out? We had to go back.
1243½. Did you receive any instructions to that effect? No.

Mr. W. Beckton. 11 May, 1887.

1244. How far did you go back? We went back past the danger-board into the main air-way, as a rule.
1245. Where was the danger-board fixed? At the last stenton, and it was moved forward as the stentons were advanced.
1246. Did you find a considerable quantity of gas in your face each day? I have found from 5 or 6 yards up to 40 yards of it.
1247. Was that every day? No, not every day. As the stentons were driven through, a certain quantity of gas would be carried away; but I do not think I worked a shift there without being in gas.
1248. Was the ventilation sufficient at that time? It was, up to the stenton; but beyond that it was not very good.
1249. Did it ever occur to you that brattice ought to have been used? Have you ever seen brattice used? There was a little brattice used there at first, but I never took any notice of it.
1250. Then has your experience been gained in this colony only? Yes; in the Bulli district.
1251. You know the object of bratticing? Yes; I do now.
1252. How did you fire shots in the presence of so much gas? I did not fire many; I did not care about it. Jim Crawford generally fired the shots.
1253. How did he do it? He generally fired the shots with a touch-paper from his Davy-lamp. He would hold the light on one side and put the touch paper against it.
1254. Had you ever worked with safety-lamps before you worked in the gassy section? No; never before then.
1255. What material did you use in tamping your shots? Sometimes we used slack coal, and sometimes stuff from the dyke. We would put it on and tamp it up dry.
1256. Did you consider that a safe method? I think it was as safe as anything else.
1257. Indeed. Did no one tell you it was unsafe? No.
1527½ *Mr. Neilson.*] Do you know anything about No. 1 or No. 2 heading? I know a little about No. 2 heading. I saw a drill hole bored there on one occasion and a gas-pipe put in it, with a tap attached. The deputy one day lit the gas coming through this pipe. It was very strong, and if he turned the tap full on it would not burn, the force was so great.
1258. How long did that blower in No. 2 heading continue? It was there, I think, when I left. I believe the pipe was put in there to convince Mr. White there was gas; at least so I heard.
1259. Who put it in? The deputy.
1260. To convince whom did you say? To convince the management.
1261. Was not the deputy part of the management? I suppose so. But perhaps they would not believe there was gas there.
1262. How long did this blower continue? Well, I only saw it once. As I say, it was so strong it would blow its own light out; but when the tap was turned on about a quarter power it would burn away fine.
1263. You have said you have known as much as from 5 to 40 yards of gas to be present in that heading. How did you manage to work there with that quantity of gas? I know the safety-lamp would be jingling on the bottom, and we complained about it, so they shifted us out of it. I suppose they saw that it was too bad.
1264. How long did you work with your lamps jingling, as you call it? That is the gas playing on the bottom.
1265. *President.*] Did you see the gas—did you have a blue blaze in the lamp? Yes.
1266. *Mr. Neilson.*] How long did it continue? Well, when we started to work the gas would go away to a certain extent; but if we went out for a time it would be just as bad when we came back, so we complained about it.
1267. If there was 40 yards of gas there the tail end of the gas would be close to the danger-board? Yes, so it was.
1268. This was a special place you are talking about—over a fault? No; it was in the main heading.
1269. But it is crossing a fault, as you pointed out on the plan? Yes.
1270. Did you pass over any rolls? We went over two in the 40 yards.
1271. Was the gas there at night time? Yes; more so at night.
1272. How did you manage to fire shots with such a quantity of gas present? Well they did it, that is all I know.
1273. You say you used dry tamping? Yes.
1274. Had you any blown-out shots? No; they always did their work well enough.
1275. Is it customary to use dry tamping? I never saw anything else used there; they used either dyke or slack.
1276. Did you never see any of the holes blown out? No; I never saw any.
1277. Were you at work on your own account all the time that the gas you describe was in this place? We were at that time. We had gas all through, but not always so bad.
1278. *Mr. Hilton.*] Did you ever report to the deputy or overman the presence of the gas? Well, it was a common occurrence. They would come and inquire about the gas, and we would tell them about it.
1279. Did you know it was a part of your duty to report the existence of gas to the overman in case he was not aware of it? No.
1280. Did you ever see a copy of these general and special rules (*produced*)? When I came here first I had a copy, but I have been away since and I have lost them, and I do not remember their contents. I was away about six or seven weeks.
1281. On resuming work again did you receive a copy of these rules? No.
1282. *Mr. Owens.*] Were you employed in No. 3 heading? Yes.
1283. And did you see a considerable amount of gas there? Yes.
1284. Have you ever worked in the western district? Very little; I drove the air-course from Hill End to the western.
1285. Did you ever see gas there? Well we were told on one occasion to clear out with our naked lights.
1286. That is the present return? Yes.
1287. Did you report that to the deputy? I did not see him. This was also abandoned ground.
1288. You found gas there? No; I will show you on the plan. (*Position indicated.*)

1289.

Mr. W. Beckton. 11 May, 1887.

1289. Did you see the gas? No, I did not see it, but a man came down and told us to clear out.
1290. When was that? That was about two years ago, just about the time the gassy was struck.
1291. *Mr. Jones.*] When you went to work at night you took the lamps from the cabin, I suppose? Yes.
1292. Did the management ever remonstrate with you? No.
1293. *Mr. Clarke.*] Where was this large accumulation of gas, the presence of which it was necessary to demonstrate? In No. 2 heading.
1294. Did you ever see the overman or the manager there? No; my heading was a different one.
1295. Why did you say that this pipe with a tap was used for the purpose of convincing them? I said that this hole was bored to show the large quantity of gas there.
1296. Did you mean to imply that the management were unwilling to believe that there was that amount of gas there? I cannot say as to that; I know there was talk among the men to that effect.
1297. It meant that there was an unwillingness to believe in the presence of such a volume of gas, I suppose? Yes; that they thought there was only a small portion of gas there, and it was to convince them that there was a large quantity.
1298. Would not the fact of your carrying safety-lamps imply the presence of gas? Yes.
1299. Then there should have been no need of convincing? You would not think so.
1300. Then why use the word? All I know is that that was the word passed among the men.
1301. *Mr. Jones.*] I suppose what you want to convey to the Commission is this: that the pipe was put in simply to show the quantity? Yes; that is what I mean.
1302. You do not mean to say that the existence of gas was doubted? No; but they did not know it was in such large quantities.
1303. *Mr. Croudace.*] How long ago was it that this large flame of gas came from No. 2 heading? I think it was during the last quarter that we came out, but I am not certain.
1304. Say as nearly as you can? It was about three months before the strike. I know it was a good way from the face of the heading.
1305. Did it totally clear away before the strike commenced? I cannot say. I only saw it once, and I never heard anything more about it after.
1306. Did you consider Crawford a cautious and prudent deputy? Well, so far as that goes, he used to caution us pretty often.
1307. Do you think he thoroughly understood his work? Yes; so far as I know, but I have not much knowledge of gas.
1308. You know the use of the Davy-lamp—that in the presence of gas it will light at the flame and expand inside, but cannot come outside? Yes, I could detect it in the flame.
1309. You know of your own knowledge that the use of the safety-lamp is that the gas can be exhibited inside of it, but not come out by ordinary means? Yes.
1310. Then was it a prudent or a proper thing for Mr. Crawford to tilt his lamp up, so as to let his lamp come in contact with the touch-paper? I do not know enough about gas to answer that question.
1311. Knowing that the flame ought to be kept inside of that gauze, was it a prudent thing for Mr. Crawford to tilt his lamp and let the flame ignite his touch-paper outside? So far as my experience went, I saw nothing wrong in it. As I say, I do not know much about it.
1312. Have you been in the mine since the strike? Yes.
1313. Can you give me an idea as regards the state of ventilation with this amount of gas inside previous to the strike, compared to the amount of ventilation after the strike? I have no idea as to that. [*The witness withdrew.*]

John Hobbs sworn and examined:—

Mr. J. Hobbs. 11 May, 1887.

1314. *President.*] You are a miner? Yes.
1315. Employed at Bulli? Yes.
1316. Have you been employed in the Bulli Colliery since the strike? No.
1317. Where have you been working? North Bulli.
1318. How long have you been a miner? Twenty-nine years.
1319. In this country or in other parts of the world? Both in this country and in other parts of the world.
1320. Where? In England and in Wales.
1321. What part of England? In Lancashire, Yorkshire, Scotland, and in South Wales.
1322. Have you been accustomed to work in fiery mines? Yes, in some of the most fiery mines in England.
1323. You are well acquainted with the use of safety-lamps? Yes; we use nothing else in these mines.
1324. How long did you work in the Bulli Colliery? About three years.
1325. And where did you work? I started to work in the Hill End for the first quarter, that was before the fault was struck.
1326. There was no gas there at that time? No, the place was free from gas.
1327. There was no gas before the fault was met with? I never saw any.
1328. Where were you on the day of the accident? I was in the house.
1329. Were you with those who went into the mines? Yes.
1330. When did you reach the mine? At half-past 5 on Wednesday evening.
1331. Where did you go? I went up to the western door.
1332. What was the condition of the ventilation of the mine? Very foggy and thick with foul air.
1333. You found a good many falls, I suppose? Yes.
1334. Beyond the western? Yes; there was a heavy fall.
1335. Beyond which you did not deem it expedient to go? A hole over the top of it had just been made, and the manager, Mr. Ross, with three or four others, went through it and got on the other side.
1336. What hour was this? It was about 7 o'clock on Wednesday night.
1337. Did you go over the fall? Yes. I thought there was danger, and I went over to see if those who went before me were all right.
1338. Was the ventilation being restored? No; there was no alteration in the ventilation at that time.

Mr. J. Hobbs. 11 May, 1887.

1339. Had the canvas been put up at the western junction? Some canvas had been put up, but a great part of the ventilation was oozing through it.
1340. How far did you go? Close to where the dyke was.
1341. What prevented you from going further? Some of the men began to fall down from the effects of after-damp; we had to carry two of them out.
1342. What time was that? Between 8 and 9 o'clock at night.
1343. What time did you return again? I stopped in that night till 12 o'clock.
1344. But you did not get beyond the dyke? No.
1345. You worked to clear away the fall? Yes.
1346. Did that improve the ventilation? It could not improve it.
1347. Would it improve the road? Yes.
1348. Would it give a greater area for the air? Oh, yes.
1349. When did you return after 12 o'clock on Wednesday night? I returned about 9 o'clock next morning.
1350. Where did you go? I went right into the gassy section.
1351. Had any explorers been there before you? I believe so.
1352. Did you see any bodies on the road? Yes, they had not been removed.
1353. How many bodies did you find between the western junction and No. 1 heading? The bodies of two boys.
1354. You found them on Wednesday night? Yes.
1355. Was one entangled in the ropes and the other naked? One of them had no clothes on.
1356. None at all? None that I could see, and the other was entangled in some ropes.
1357. They had the appearance of being blown about? Yes.
1358. Who were with you? Mr. Ross, Fred. Robbins, and three or four more. I believe there were six of us altogether.
1359. Did you notice whether the boy who had no clothes on was burnt to any extent? I had no time to look for burning, the after-damp was too bad.
1360. Was it very hot? It was not very hot, but the after-damp was very bad.
1361. On the Thursday morning when you went into the mine, did you go with Mr. Green to No. 1 heading? No.
1362. Where did you go? I went into the gassy, but I think I went by myself.
1363. What do I understand by gassy, is that not the Hill End district? Yes; we call it gassy inside the dyke. I went through the dyke with Mr. Williams, the Manager of Coalcliff. I stopped there and placed forty-two bodies on stretchers, and other men carried them out.
1364. Did you identify any of them? Yes, some of them.
1365. Did you take any note of the positions of the bodies? Yes, I know the way all of them were lying.
1366. On reaching No. 1 heading, did you see any bodies there? Yes, I believe there was a man lying by the side of Millwood, and I believe Millwood was the second body. It was on the other side of the second crossing that was working.
1367. Were there any men lying in the main tunnel opposite No. 1 heading? No.
1368. Did you pass two bords? Yes, two bords that were not working.
1369. Was there a man lying at the second bord, near the main road? No; there was a man lying a little further out, but the two bodies were near each other.
1370. One of them was Millwood? Yes, I have no doubt about it.
1371. Was Millwood lying in a conspicuous position? Yes, and I took his watch off him.
1372. Where were the other bodies? Just past the next bord. There was one lying in the bord on the road, and another lying in the face of the same bord.
1373. Did you identify them? No, they were strangers to me.
1374. Going up the heading, what did you find? There was a man lying in some slack beside the cut-through, and inside the cut-through there was a horse; and there was a man lying between the front legs of the horse.
1375. You got five men a little above the fifth bord, then opposite or near the next bord you got one lying near the main road, and another man near the face, then you go up and were not two boys found near the next bord? No; I don't think there were.
1376. On the plan there are two other bords, namely, Nos. 6 and 7 working bords, and there are two men lying on the main road, near the entrances of each of these bords? I do not recollect seeing them.
1377. Was Mr. Green there with you? Mr. Williams and Fred. Robbins, and they were taking in men.
1378. Then you came to the cut-through, where the danger-board was placed between Nos. 1 and 2 headings;—was there a man found there? Yes.
1379. Near the entrance of the cut-through of No. 1 heading there was another man found? Yes, on the slack.
1380. Was he on his face? No, lying on his back.
1381. How were these men on the main road lying? Mostly with their face downwards, as if they were proceeding down the road.
1382. With the exception of Millwood? Millwood was sitting with his head on his left shoulder, and his big lamp was by his side.
1383. Then you come into No. 2 heading;—where did you find the men in No. 2 heading going downwards? There was a little bit of a rib in a bord which had just been turned off, and was in about 2 yards. There was one body there. It appeared that he had been sheltering himself, and he was lying down where he had fallen. We went back to where a fault had been blown up, and there were nine bodies in a heap in this fault, which was very narrow. I believe there were nine there altogether.
1384. Was there one in the next bord? No.
1385. Were there two on the main road near the next bord further down? The nine men I refer to were close together, no distance separated any of them, but there were two men in the double bord off No. 2 heading.
1386. Then you come down towards the flat? Yes.

Mr. J. Hobbs. 11 May, 1887.

1387. And you reached the diagonal road? Yes, there was one man lying outside this lot; he had a tea-bottle in his hand, and this was lifted up just as if he had been in the act of drinking when the explosion occurred.
1388. You would conclude from that that his death had been very sudden? Yes, and it appeared as if all the old miners were trying to make there way out, but some of the miners had evidently dropped where they were standing.
1389. At this particular part they were all in the main road? Yes, all of them.
1390. Were their heads lying as if they were making their way down the road? All, except one, who was lying on his back.
1391. Were these men lying on top of each other? No, but they were lying very close to each other.
1392. Did you observe the diagonal road where the coal was brought from No. 1 heading into the main tunnel—what condition was that road in? Yes; there was a set of skips there, and the empty skips were all turned on their sides as if the blast had overtaken them as they were coming down the road.
1393. Was there a boy at the end of those skips? I suppose so, but I did not find him.
1394. Now, come to the main tunnel? There was a horse at the mouth of No. 2, and the boy who drove the horse.
1395. Did you observe the condition of the stoppings? Yes; they were blown towards the return as if blown inwards off the road.
1396. Did you go over the stoppings? No; we bratticed them up all the way down; the first one was a heading where a door is supposed to be, and next was an ordinary stopping; the third had been a horse-road for the return, and it had been shifted further in.
1397. Did you find any men in the main tunnel or the flat between Nos. 1 and 2? On the middle of the flat there were two boys—one was almost battered to pieces, and was lying under a full skip; the other was lying with an empty skip just turned over him as if the blast had come up and blown these skips to pieces. There was another man in No. 3, and every bone is his body was broken, and his inside was out; he was the worst mutilated of the lot, and had no clothes on; he was found in No. 3 turn.
1398. What about No. 2 heading? I finished there.
1399. Coming back to these boys that you got in the main tunnel before coming to No. 1 heading, one of whom was entangled in the ropes, had they any marks of burning on them? Their hair was burnt, but I did not take special notice of their skin.
1400. Coming to No. 1 heading, the first body that you found was opposite the second working bord off the main road? Yes; one of the bodies found there was badly burnt. Millwood, who was also found near there did not appear to be burnt at all; he appeared as natural as if alive.
1401. You conclude that he died from after-damp? Yes.
1402. Coming to where you got five or six other bodies, were they in the same condition? They were all lying with their faces downwards, and they did not appear to be burnt.
1403. Was there a man right in the face? Yes, with a pick by his side, and his light was hanging on his billycan.
1404. The position and condition of that body would lead you to conclude that death had come suddenly? Yes.
1405. Coming up to the cut-through there was a man lying on his back? Yes; he was burnt.
1406. Did you observe the condition of the horse found there? Yes, and I noticed that the body of the horse was awfully swollen.
1407. Some time had elapsed which might account for the swelling? Yes.
1408. Was the man lying near the horse burnt? Yes.
1409. What was his name? He was a stranger to me. Just beyond this horse I found a safety-lamp gauze; it was in No. 1 heading, a little further in than the horse. I picked up another lamp, and I tried it, and found it open.
1410. Was the gauze separated from the lamp? No.
1411. The lamp was intact? Yes, but open.
1412. Not unscrewed? No.
1413. Where was the lamp-gauze you found? Close to the horse.
1414. And where did you get the second lamp? Inside, nearer the face where there is a stone or the beginning of a roll.
1415. Did you find some loose powder? No; I found a coil of fuse burnt to ashes hanging on the prop.
1416. Have you heard that powder was found? Yes, I have heard some one say so.
1417. You have no doubt that the man found in the cut-through and the man that was under the horse were burnt? Yes, they were burnt.
1418. And the man you got further down the heading road had no visible marks of burning? No.
1419. Now come into No. 2 heading? The first one was found in a bord; he did not seem to be burnt to any noticeable extent. I was engaged in taking the bodies and placing them on stretchers, and I noticed that one was burnt very badly.
1420. Who was that? I think it was Jack O'Neill; his was the outside body but one in No. 2 heading.
1421. And he was found in the main road? Yes.
1422. Down in another bord you got two men? Yes; one on the bord and another further in; the one that was furthest out was burnt a little.
1423. Can you speak of those found in the main road? Yes; they were all lying with their faces down; some of them had their hands burnt and some their faces, but not severely. Jack O'Neill was the worst of the lot.
1424. Are you now referring to the group of men that were lying together? Yes; there were nine or ten altogether, but they were not badly burnt.
1425. Did you examine the condition of the bords off No. 2 heading? Yes.
1426. Did you see any marks of fire? Yes; a coil of fuse was found in No. 2 heading.
1427. What bords did you go in off No. 2 heading? I went into every one of them, and tried everywhere for gas, and I found a little in one of the bords; I believe it was Jack O'Neill's bord.
1428. It was a small quantity? Yes.
1429. Did you examine the last two or three bords nearest the main tunnel? Yes; in one there was a set of empty skips, but I saw no evidences of fire on them.
1430. The last bord down, did you go into that? I am not sure.

Mr. J. Hobbs. 11 May, 1887.

1431. On what side of the skips did you go? I went in on one side and came out on the other, and I did not see much evidence of the blast; the skips were all on the road with the exception of one.
1432. Did you observe any evidence of fire on the props as if the blast had swept through the cut-through? Yes; I saw the props were crispy.
1433. Was that an evidence of fire? Yes; fire had been around them and made them crispy.
1434. You examined No. 1 heading? Yes.
1435. Did you see any evidence of fire? The props here seemed to be quite different; they seemed as if they had not been touched, and I saw no evidence of fire about them.
1436. You would not be surprised to learn that traces of fire have been found there? No; because I did not look particularly.
1437. Your examination was necessarily a hurried one? Yes.
1438. Coming down to the tunnel you did not go through the stopping that was blown out? No.
1439. Did you put up a canvas? Yes.
1440. You did not go up Nos. 3 and 4? No, not into No. 4, because we were short of canvas, and as it was getting late. On Friday morning we started out.
1441. Have you any other information to give us as to the examination at that time? Of course I worked in the gassy from the time gas was struck, when we passed over the dyke to where the workings are now, and I turned off No. 4 heading.
1442. In working that heading did you find gas? Well, you could find gas anywhere there; we were never without gas more or less. Sometimes there would be great quantities, and at others, when the cut-through was near the face, it would be much less.
1443. It depended on the ventilation? Yes.
1444. You are only speaking of the time before the erection of the new furnace? Yes.
1445. Was the ventilation sufficient at that time? I did not look much after that.
1446. Did you complain? Yes, both about the gas and the ventilation.
1447. I suppose it would probably be through the representations that the men made, as well as the evidence of gas itself, that caused the new shaft to be sunk? I believe the new shaft was started before much gas was got at all.
1448. How long ago? I think it was before the dyke was struck.
1449. Was it stopped for a time? It is only about a year and a half ago since the gassy started.
1450. But that is a long time to sink a shaft. Did you work with locked lamps? Yes; sometimes they were locked and sometimes they were unlocked.
1451. At night, were they unlocked? Both night and day.
1452. Why was the rule to lock them not continuous? I cannot say.
1453. Was there a rule for the locking of the safety-lamp? There is a rule all over the world.
1454. Did the deputy lock the lamps or not? I believe he locked them for three or four weeks at the latter end.
1455. Then he locked them for a time? Yes, perhaps for six or seven weeks.
1456. Did you complain to the deputy about it? I told him that the lamps ought to be locked.
1457. What did he say? Well, he said, "I will see that they are locked," and then they would be locked for a time. When the men started getting coal the deputy locked the lamps himself, and before that I was always at him about locking them, and about several other things that were not fit to be done.
1458. What were these things? Well, there was a safety-lamp used night and day with the top out, and the gas was coming out in the gassy and in the straight.
1459. Who used this lamp? Bill Beckton and Thomas Wales. My mate used it in the day-shift. I told him about it, and he said, "It is right enough; hang it back on the road."
1460. You know the special rules? Yes.
1461. You know the provision as to the duty of miners in dealing with safety-lamps, to take off the gauze and take it home for cleaning purposes, and if the gauze requires repairing to take it to the lamp-cabin;—did Beckton do so? Yes.
1462. How do you know? I told the deputy about it.
1463. But how do you know he took it to the cabin? Both of them did.
1464. But how did you know? I told the deputy about it myself.
1465. And what did he say? He said, "It is right enough; hang it back far enough on the rib."
1466. That was Crawford? Yes; he said, "I have been complaining to White about it." He also said, "I cannot get any gauze, and White won't take any notice of me."
1467. Who said that? Crawford.
1468. Are you sure of that? Yes.
1469. How did you work the coal in these places? Sometimes with a pick and sometimes we blasted it.
1470. What explosives did you use? Loose powder.
1471. How did you fire the powder? With a fuse and a bit of touch.
1472. How did you fire the touch? With the safety-lamp.
1473. You tilted the lamp? Yes.
1474. Was that safe? No.
1475. You say you have had a great deal of experience; and you said the gas was always present, and you made frequent complaints to the deputy, and yet you say that you perpetrated the awful absurdity in lighting the touch-paper by tilting the lamp? Remember, we did not do that in the presence of gas; if there was any in the face we always brushed it away before firing the shot.
1476. What effect would the flame have in inpinging upon the gauze? No effect at all; the proper way to clean the gauze is with a covering of oil.
1477. Is there any other way of cleaning the gauze? You can clean it by steam.
1478. Can you clean it with soda? Yes; but if you boil the gauze it will loosen it.
1479. What was the practice in England? We had nothing to do with the lamps there.
1480. It was a rough-and-ready way you had? Yes.
1481. It does not redound to the common-sense of the people who do it. You cannot state the condition of that district of the mine since resuming work after the strike? No; not since the strike.
1482. Of course you examined the places during the time you were taking out the bodies, and you saw some gas? Yes; in No 2, and a little bit in a bord off No. 2.
1483. And the ventilation was then deranged? Yes.

1484. On account of the destruction of the stoppings and doors? Yes.
1485. Was that a likely time to find gas? No; there is no gas where there is black-damp.
1486. What effect does that have? It drives it out or kills it.
1487. Are you sure of that? Yes.
1488. Suppose gas was existing in large quantities, how could you test for gas? In black-damp or after-damp we could not test, because the lamp would not burn.
1489. Did you find any gas anywhere else? No; only in one bord.
1490. The ventilation was then undoubtedly deranged? Yes.
1491. Very well, don't you think that with the ventilation so deranged it was a very likely time for the discovery of gas? No; the after-damp would stop it.
1492. How do you account for the gas in No. 2 heading? On account of the poor ventilation there.
1493. It was beyond a cut-through? Yes.
1494. Was the current of air appreciable that was going through the cut-through? Yes; I threw up a little bit of slack and found that the air was going through.
1495. Did you form any conclusion as to the cause of this accident? I cannot form any conclusion, but I have my opinion.
1496. That is what I want? I believe it was a fire-damp explosion, and that most of the damage was done between the Western and the gassy.
1497. Where, in your opinion? In the left-hand heading, off the middle flat.
1498. That is No. 2? Oh, no; it is between the Western and the dyke.
1499. How do you account for the position of the skips from the diagonal road, on that supposition, and if it fired in the left-hand heading who fired it? I don't say it fired there; I believe it fired in the bottom of the straight or No. 5 heading.
1500. How do you account for the position of the skips and the amount of destruction of property? Because everything was blown upwards from the bottom of the flat. The full skips were lifted up there.
1501. And supposing the blast came from No. 2? All these things would have been blown in a different way.
1502. What blew that stopping in towards the left? I cannot account for it; the stoppings were blown into the return, and everything else was blown from the bottom.
1503. And yet you follow the course that the blast has taken? No.
1504. You did not go into the mine with the object of discovering the course of the blast? No; only to help to carry the bodies out.
1505. Your conviction is that the explosion took place where you state? Yes; and that there was not enough gas in the gassy to do the damage that has been done. A large quantity of gas has lit there before a dozen times to my knowledge.
1506. Was that a safe state of matters? It was not.
1507. Did you complain? Yes.
1508. Did you not think it a prudent thing to retire altogether? It was as safe for me as for the others.
1509. Do you think that self-preservation is the first law of humanity? Yes; but men don't always think of that.
1510. I am afraid that men do think of that. Have you formed any opinion upon, or have you studied the behaviour of coal-dust in the presence of gas? I never studied anything of that kind; I only studied the easiest way of working coal.
1511. I think a man of your experience ought to look a little higher, and I am quite sure you do it.
1512. *Mr. Neilson.*] With reference to Millwood's lamp, who picked it up? I did not.
1513. Were you there when it was picked up? No; I was not.
1514. You were working in No. 3 heading? No; in No. 4.
1515. That is the heading going parallel with No. 3? Yes.
1516. What was the largest quantity of gas you have seen there? It was back to the cut-through in No. 3; it was back to the cut-through in No. 4; and it was back 8 or 9 yards in the straight; and it was full in No. 6.
1517. Outside the danger-board? Inside.
1518. Were you near up to the stentons? They were over the distance; 35 yards is the distance according to the rules.
1519. The gas tailed right out to the danger-board? No; I did not say that. The danger-board was outside at No. 3 turn, and there was a cut-through inside of that.
1520. The gas tailed back the full length where you were working? Yes.
1521. What gas had you in the face? The face was full of gas.
1522. Right on the bottom? Down to the stone. I was driving the cut-through in No. 3 up to No. 4.
1523. Your lamp would be full of fire? There was no fire at all in the lamp.
1524. Notwithstanding that it tailed back for 35 yards? I did not say that.
1525. I understood you to say that? It was to the cut-through.
1526. I noticed that you stated before that there were 40 yards of gas? That is not my evidence as you will see.
1527. Crawford fired your shots? Yes.
1528. Did he go back to light the touch? Yes.
1529. Even when he knew there was gas in the face? Yes; but it was brushed clean before it was fired.
1530. Was that the custom? Yes; but it was not the regular custom. There ought to have been bratticing.
1531. Was it the practice? Yes.
1532. A man would take his shirt to brush the gas out? That was our practice.
1533. The shot was lit inside the gas? When we brushed her out we could hardly see any gas.
1534 5. Did you brush from the face right back? Yes; to the cut-through. There was a cut-through beyond the danger-board, inside of it.
1536. Do you know that door leading into the Western? Yes.
1537. How is it made? It was an open door when I was there.

Mr. J. Hobbs. 11 May, 1887.

1538. When did you see it last before the strike? The last thing before the strike I believe it was there.
1539. You never saw any slide? No; after the explosion there was no door there at all.
1540. Was there any trapper at that door? I think that the man who looked after the set also looked after that door.
1541. There was some one attending it? Yes.
1542. The next door was between Nos. 1 and 2 headings? Yes; a little lower down than the lamp-cabin,
1543. Was there a trapper there? Yes.
1544. There was another door further in? Yes.
1545. Was there a trapper there? Yes.
1546. You are quite sure you never saw a slide in this door? No; that road was not my road for travelling in and out, and I never made it my duty to look after another man's business.
1547. You never heard of a regulator being put on the western door since the erection of the new furnace? I never saw it; I heard them talking about it.
1548. Did you complain about the gas to any other person than the deputy? No; I thought it my duty to tell the deputy, as he was the person to look after that.
1549. *Mr. Hilton.*] You say that the Deputy Crawford complained of the bad state of the lamps? Yes.
1550. Did he say to whom he complained? Yes; he said he told White about them, and he took no notice.
1551. Did you hear him say whether he had complained to the manager? I never heard him say that.
1552. You are sure that Crawford stated to White about the bad state of the lamps? Yes.
1553. *Mr. Owens.*] In reference to that lamp with the top gauze off, I expect you have seen the Government Inspector in the mine? Yes.
1554. Did you see him when you where using that dangerous lamp without a cap? The cap was there, but the top gauze was falling to pieces.
1555. You never unscrewed it and showed it to him? When the inspector came it was all right; a new gauze was put in.
1556. Did you ever hear of a blower being struck in No. 2 heading, and of the gas being carried away with a gas-pipe? Yes; a drill-hole had been put in the side, and a bit of a gas-pipe had been put on a blower, and you could turn it off and on like ordinary gas.
1557. And you were in the habit of lighting this? No.
1558. Who was? Crawford.
1559. Did you see him light it? Yes; when we were a long way back all over the stone we used to strike blowers, and you could hear them buzzing like steam-cocks for a week or a fortnight.
1560. What course did you take? I took no notice of it; we kept our lamps back.
1561. Did you find any gas in any other part of the pit? I found a little gas once between the Western and the Hill End in the return in the heading off the middle flat; it was not so sharp as that which came off beyond the dyke. I saw Crawford as I was going in, and he told me he heard a fall, and he told me to go and see if it was clear; I went in to have a look, and found the gas.
1562. *Mr. Clarke.*] You say you saw Millwood's body with his lamp alongside of him? Yes.
1563. Or did you say you did not see his lamp? I was asked if I saw anybody take it. I saw his lamp and other lamps.
1564. He had a different kind of lamp? Yes; a brass lamp.
1565. Have you heard it was found elsewhere? I don't know about that.
1566. Have you heard it? No.
1567. You are sure it was found alongside of him? Yes; I saw it with my own eyes on Thursday morning.
1568. How far was his body from the main tunnel on the out-bye side? I daresay it was about 40 or 50 yards.
1569. In firing shots you had to light the fuse with touch-paper? Yes; we used to go outside the gas to light the touch-paper.
1570. You used to brush out the gas first? Yes; one would be brushing while the other went to light the shot.
1571. Did you ascertain the heading was free from gas before lighting? Yes.
1572. You would light the gauze outside and bring it to the fuse? Yes; the man brushing away the gas would say she was clear, and the other would then come in and light the shot.
1573. Do you know whether fuse will fire gas? Yes; the spitting of the fuse would fire gas.
1574. *President.*] And yet you work with fuse? Yes.
1575. You used means that would fire the gas? Nearly everybody fired the gas but myself in the gassy. Some fired about 12 yards of gas to my knowledge, and men work with their lamp red hot in it.
1576. That speaks volumes for the men? I told them to go to the deputy.
1577. Yet you used to fire shots with fuse that would fire gas? Yes; others did it besides myself.
1578. *Mr. Jones.*] Crawford fired the shots for you before the strike by the same means? Yes; when the men came down to work by the tonnage he fired the shots.
1579. And he fired them in the same way? Yes; the very same. I have seen them fired with a wire; but one way is as safe as the other.
1580. *Mr. Croudace.*] There seems to be some doubt as to the spot where Millwood's body was found—is there any doubt in your mind? Not the slightest.
1581. Where was he found? On the road at the second crossing that was working—the fourth bord out, on the left-hand side.
1582. You are quite sure about that? Yes.
1583. I want just to question you in regard to this lamp which William Beckton and Thomas Wales used with the top of it knocked out? It was burnt out.
1584. Do you think it was a prudent, proper, or right thing, not only in your own interest, but in the interest of everybody working in the mine, for you three or four men to continue working for one minute with such a lamp as that? It was not a right thing.
1585. You must now realise that? But we were bound to do it, or else knock off work.
1586. How were you bound to do it? There was no other lamp available, and if we did not do it someone else would.

1587. Do you mean to say that you could have induced another man to do so? I could not have stopped him, but I could have stopped at home myself.
1588. Would it not be better to do that than jeopardise the life of your fellow-men? Yes.
1589. There was the fact of a large quantity of gas, and yet you were tempted to work in it with this damaged lamp? Yes; and I tried to alter it as much as I could, but they would take no notice of me.
1590. You say you have seen in No. 3 heading the gas right back to the cut-through, also in No. 4, but you do not know the distance. You also have seen it from the face of No. 5. Further on you say that some of these places were 40 yards from the danger-board. Now, have you ever seen gas from the face back to the last holed stenton, a distance of 40 yards? I have seen it back beyond the danger-board for 30 yards.
1591. Where was the danger-board? By the lamp-cabin.
1592. How far from the face? There was no lamp-cabin there at this time; I mean to say where the lamp-cabin is now.
1593. Was the caution-board put up at the last holed stenton? Yes.
1594. Always? Yes; on the last stenton.
1595. From there to the face, what is the greatest distance that you have seen gas accumulated? I have seen it different distances; sometimes there would be from 10 to 15 yards of gas, and it ran out to a feather in thickness.
1596. Have you ever seen it when it was 40 yards from the cut-through—in other words, have you ever seen gas extending a distance of 40 yards right back to the cut-through? Yes.
1597. Have you worked in it? No.
1598. That is the point that puzzled me, as you could not brush out 40 yards of gas without your lamp becoming perfectly red hot? Quite so.
1599. You have never worked in 40 yards of gas? No; I have sometimes worked in 10 and 15 yards of it, but I have known of the presence of gas in the mine for a distance of 50 or 60 yards.
1600. I will ask you now, have you ever known of any accumulation of gas previous to the strike? Yes.
1601. What is the largest accumulation you have seen? Between 50 and 60 yards.
1602. Where was it? Just by the dyke.
1603. Not in Nos. 1 or 2? No. 1 was just turned away, a prop stood there, and the turn was put down, and the place was being worked for a flat 15 or 16 feet wide; there was a prop there with a danger-board on it?
1604. How long was that previous to the strike? It would be nine or twelve months before the strike.
1605. Have you known any other accumulation (say) within two or three months of the strike? Yes; these headings were all full about three weeks before the strike.
1606. Which headings? No. 3 was full back to the stenton; they reckoned it was 40 yards. The heading I was working in, No. 4, was full back to the stenton, and the straight was full, and there was gas in No. 6.
1607. Were any of these headings stopped? No. 3 was stopped, but I was working there to put an air-course through.
1608. How long was that before the strike? About three weeks.
1609. Do you know whether the gas was cleared out before the strike took place? We had the cut-through through before the strike, and Nos. 3 and 4 were completely clear.
1610. You say that Nos. 3 and 4 were completely clear of gas just previous to the strike. Yes.
1611. That gas having been cleared away, was there any actual accumulation in the mine? I don't know; there was none in these headings.
1612. You don't know whether there was any accumulation anywhere else? There was some in the straight heading, and there was an air-course driving there.
1613. What amount of gas was there there? That was full.
1614. How do you know? Because I had been in there.
1615. Who worked there? Nobody; the men had knocked off.
1616. How far was it from the face of No. 5, called the straight back, to the cut-through? It was 40 yards, or somewhere about that distance.
1617. Was that full of gas? Not all the road; the air-course was full.
1618. You say that the distance from the face back to the cut-through was 40 yards? Yes.
1619. Did the gas remain in that position up to the day of the strike? Yes; No. 6 was full. There was a big stone in No. 6, and the gas was full over that at the time of the strike.
1620. I will ask you to point out the places on the plan? (*Places pointed out.*) Are you perfectly sure that these accumulations were not cleared away before the strike? I am quite sure.
1621. You say that whoever were driving this cut-through did not finish it before the strike? It was not finished, as the men were taken out because there was too much gas there.
1622. Since resuming work after the strike, have you any knowledge as to whether the stentons have been holed through? No.
1623. Can you tell me how much air was going down here? I heard that the air had been measured, and that there were 3,500 cubic feet coming out of No. 2 and going down the road.
1624. What sort of current had you passing through the last stenton? A good current; but it did not work its way into the face of the heading, because there was no bratticing to carry it out.
1625. Did you ever go to see Beckton and his mate? Yes.
1626. You say there were 40 yards of gas there? I said there were 40 yards of gas from the return down to the face.
1627. You said that the face of No. 5 was full—do you mean from the roof to the bottom? Yes.
1628. Then you said that Beckton and his mate were working in this place, and that you saw them? Yes.
1629. Did you notice their lamps? No.
1630. Did you smell the fumes from their lamps? Yes, when they were in the gas; but after they had been working a while it would clear away to a large extent.
1631. Were these men working with their lamps on fire? No.
1632. You are now talking to a man who has seen more gas than ever appeared in the Bulli mine, and I know that you cannot take your lamp into No. 2 heading now without its becoming red-hot; and if your words are to be believed that the cut-through and the face of No. 5 heading were full of gas, you must

Mr. J. Hobbs. 11 May, 1887.

know that the lamps were red-hot? Of course, by working in the heading, and by the current produced by the running of the skips, gas would clear away while the men were working in the heading.
1633. Well, the heading was not full then? Not while the men were working; but if they stopped for any time she would fill again; but the men were working in No. 6 heading with their lamps full—that is, their lamps jingled with the gas.
1634. You omitted to say that. I know exactly what you mean by the lamps jingling? Yes; that was in No. 6.
1635. You have no information as to whether that gas has been cleared away? I know nothing about it after the strike.
1636. Now, with respect to the habit of lighting the touch by tilting the lamp, and therefore destroying the gauze, and endangering many lives—was that a proper thing, not only for you, but for the deputy to do? No, it was not; but they do that all over the world.
1637. I undertake to say they do not? I have seen them do it in other parts of the world, and I have done it myself; and I have worked in mines where there was as much gas as in any part of the world.
1638. I undertake to say that if you had been caught doing that you would have been at once called upon to deliver up your lamp.
1639. *President.*] And I am afraid that you would have had your choice of gaols within a week.
1640. *Mr. Croudace.*] Have you ever known a shot to light the gas? Yes.
1641. And that would be perfectly possible here? Yes.
1642. With regard to the ventilation previous to the strike, did you make a close observation of the separate door going into the Western from the main tunnel, and can you describe what it was like? The door I saw opened just like a common door with hinges.
1643. Was there on any portion of it a sliding panel? I never saw it. I opened and shut it like any other door.
1644. Was there one door or two? Only one.
1645. Going through there, alongside the engine brow, you come to the heading through the dyke between Nos. 1 and 2 headings—was there a door there? Yes.
1646. Were there two doors? Only one.
1647. Was there a trapper there? Yes.
1648. In the diagonal road, made for the sets from No. 1 heading, was there a door there? I never saw one; but that crosscut has been made since I worked there.
1649. In any of these places—Nos. 1, 2, 3, 4, 5, and 6—was there any bratticing used by way of taking air into the faces? No.
1650. Would that be a better plan? Yes. This explosion would never have happened if that had been done—that is my opinion.
1651. You cannot at this time fairly suggest such a thing, for I know collieries where every heading was bratticed, and every door doubled, yet accidents happened? Well, nothing of this kind was done at Bulli.
1652. I suppose it is no use asking you anything about the new furnace? No.
1653. Did you hear that there was a great improvement in the ventilation? No; I heard them say it was just about the same.
1654. We have had it, as a matter of fact, that it was trebled by the erection of the new furnace. However, you do not know? I do not know anything about that.
1655. *Mr. Jones.*] In the early part of your evidence I understood you to say that the caution-board was not always placed opposite the last stenton? The caution-boards were kept back until the next stenton was holed through, and then when the heading got away the danger-boards were shifted forward.
1656. Always? Yes.
1657. *President.*] Do I understand you to say that you were the last man that worked in No. 5, or, as you call it, No. 6? Beckton was the last man working in the straight.
1658. Was it full of gas? The air-course in the bottom was full.
1659. What was the number of that heading? No. 5 in the straight.
1660. I also understood you to say Nos. 3 and 4 were full of gas, and that you had put over the cut-through, and that the gas then cleared away? Yes.
1661. The coal continued to give off gas, notwithstanding the cut-through? Yes.
1662. You say that the straight-in tunnel gave off gas, and that a considerable quantity lay in the face of the heading when you came out on strike? Yes.
1663. Also, that No. 5, which you call No. 6, gave off a considerable quantity of gas, and that you left that place with a quantity of gas in it? Yes.
1664. Before the strike, with the old system of ventilation and the old furnace, the quantity of air, you say, amounted to 3,500 cubic feet, and that this quantity circulated through the last stenton? Yes.
1665. Can you explain to me this circumstance, that after the explosion when it had caused a total derangement of the system of ventilation with practically no circulation of air at all, that in none of these places which you have mentioned, Nos. 3, 4, and the straight or No. 5, not a single vestige of gas was found? I can give no account of that.
1666. Do not you think it strange? Yes, it is strange.
1667. You left these places giving off gas in abundance? Yes.
1668. When there was a circulation of only 3,500 cubic feet per minute, yet the time comes when this current is entirely withdrawn, and these same places contained no gas—do not you think that is remarkably strange? I cannot give any account for that, excepting it is accounted for in the new furnace.
1669. But in all of these places, with the exception of Nos. 1 and 2 headings, where you detected a slight quantity, you found no gas in any of them? No.
1670. *Mr. Croudace.*] Have you any idea how it is that the gas which you left in these places does not exist now? I cannot say.
1671. Do not you know that gas will exhaust itself in the course of time? No; I have no idea of that kind.
1672. Have you never heard of a blower expending itself? Of course I have. We have struck very strong ones in the Bulli mine. [*The witness withdrew.*]

Noah

Noah Hobbs sworn and examined :— Mr. N. Hobbs. 11 May, 1887.

1673. *President.*] You are a miner? Yes.
1674. Employed at Bulli? Yes.
1675. Were you working on the day of the accident? No.
1676. Where do you work? Nowhere.
1677. But you reached Bulli after the accident? Yes.
1678. How were you apprised of the accident? I heard a number of men shouting out about it.
1679. And you went to the colliery? Yes.
1680. Did you enter the mine along with your brother? No.
1681. When did you go in? At about 7 o'clock at night.
1682. Where did you go? I went to the other side of the big fall on the other side of the western that night.
1683. Who were there with you? I can hardly tell who were there.
1684. Who had you with you when you went in? I believe I was by myself.
1685. Surely you must know? Yes; I went in by myself.
1686. Were there any people on the other side of the western when you got in? There was nobody there then.
1687. No one at all? Not on the other side of the western; the men were then coming back—they had been over.
1688. What did you do? I stopped there.
1689. What did you do? Some managers came up and told us to clear the fall.
1690. Did you give them a hand? No.
1691. What did you do? Nothing.
1692. Well you could not do much less. Did you come out? At 10 o'clock at night I came out.
1693. When did you go in again? I think I went in next day.
1694. Did you work then? Yes, I worked a little then.
1695. With whom? With Mr. MacCabe.
1696. What time did you go in on Thursday morning? I do not know.
1697. Think? I cannot think.
1698. If a question is asked you you must answer it—do not trifle with me, please? I am not trifling; I think it was about 5 o'clock on Thursday morning.
1699. How long did you take to get in? We got right in about 7 o'clock.
1700. Well, why did you not say it at first—what did you do with Mr. MacCabe? We went down to the cabin and got some tools.
1701. Did you clear the large fall on the other side of the Western? No; we were clearing on the other side of the flat to get right into the gassy. We went round to No. 1, and went into the furthest stenton in No. 1; I then came back and went out.
1702. Did you remove any of the bodies? I never touched any of them.
1703. You passed them? Yes.
1704. Were your party the first that would pass them? Yes.
1705. In going over the fall what bodies did you first come to? The bodies of two boys.
1706. Where were they lying? In the middle of the road.
1707. Had they been removed by a previous party? I think so.
1708. Did you identify the bodies in going up to No. 1? I knew Millwood and Jerry Westwood.
1709. Were those the only two you knew in No. 1 heading? That is all.
1710. How many bodies did your party find there? Sixteen in No. 1.
1711. Did you go into the face with Mr. MacCabe? No, not to the face, but I was in the heading and some of the bords.
1712. Did you see any evidences of fire or of a fire-damp explosion? Yes; all the props were charred.
1713. Westwood's body was lying at the last stenton? Yes.
1714. Did you examine him? No; I only just looked at him with the lamp.
1715. Did you see the horse there? Not at that time.
1716. Did you examine the danger-board? No.
1717. You did not go through the stenton? No.
1718. When did you go through? On the Monday after that.
1719. Along with whom? With John McKenna, Beckton, and Inspector Rowan, White, and I don't know the other one.
1720. Did you inspect these workings with the view of ascertaining the cause of the accident? No.
1721. What was it to do? To see how much one of the places was over the distance allowed.
1722. To inspect the inspector? Yes.
1723. You were not actuated by any desire to ascertain the cause of the disaster? No.
1724. Did you go down No. 2 heading? Yes.
1725. Did you pay any attention to the state of the workings going down? Yes; I noticed the things in the headings.
1726. What did you see? I did not see much; I saw that everything was a total wreck.
1727. Did you satisfy yourself that it resulted from an explosion? Yes.
1728. What evidences did you see? Everything was upside down.
1729. Were all the bodies burnt? Yes.
1730. The bodies had been removed at this time? Yes, but the skips and props and other things were there.
1731. Where did you work previous to the strike? I worked in the straight, or No. 5 heading.
1732. Was it off the straight tunnel to the left? Yes.
1733. We would call that No. 6; you call the straight-in tunnel No. 5? Yes.
1734. Did you work there up to the last day before the strike? Yes.
1735. How did you leave the face? What way do you mean?
1736. Was there any gas there? Yes, full of gas; the return air-course was full up.
1737. Was there any return at all? No, not there.
1738. Where was it? Further back, coming off No. 6. 1739.

Mr. N. Hobbs.

11 May, 1887.

1739. You were in advance of the last cut-through, and you say down to the cut-through it was full of gas? It was not full in the heading, and there was always more or less gas there, and the cut-through was full up.
1740. Was there any air passing through the cut-through? No; it was going out of No. 4, and it had no return, and there was no canvas.
1741. Where did it go after leaving No. 4? To No. 6.
1742. Where then? It would go into the ——— return.
1743. You said that the return was full of gas? No, not that return; I mean the return off No. 5 heading.
1744. Let us understand that point. There was a door in the main tunnel, which sent the air up No. 3, and from No. 3 to No. 4, and from No. 4 back to the main tunnel? That did not make the air come down.
1745. Was there a door in the main tunnel? Yes.
1746. The object of that door was to intercept the air and to send it into No. 3? Yes.
1747. And it then returned down No. 4? Yes, and then into No. 6.
1748. And was the return full of gas? No.
1749. Well, what return was full of gas? The air-course down the straight.
1750. How much gas did it contain? There was a good bit of gas in the face, and the air-course was full up.
1751. *Mr. Croudace.*] The last holed cut-through was on the in-bye side of No. 4 heading? Yes.
1752. Then you had driven far enough for another cut-through on the inside of that, but which other cut-through was not at that time holed through? Yes, it was not holed through.
1753. And that was the cut-through that was full? Yes; the air was going through to the return.
1754. *President.*] Do you know the quantity of air that was going through the last holed cut-through? I know nothing about that.
1755. Did you work in No. 5 with safety-lamps? Yes; but I worked in the air-course in No. 5, which was not through.
1756. Did you work with a safety-lamp? Yes.
1757. And you are conversant with the use of a safety-lamp? Yes.
1758. You have worked with them before? Yes.
1759. Were the lamps locked? Yes.
1760. In what other parts of the mine have you worked? In No. 3 in the ——— return, and in No. 7.
1761. That is down to the left of the tunnel? Yes.
1762. And you found gas in all of these places? Yes, in all of them.
1763. Was gas found up to the last day before the strike? There was none in the return at that time.
1764. Was there any gas in No. 5 heading? Oh, yes.
1765. Do you know whether there was any in Nos. 3 and 4? There was some in No. 3.
1766. Do you know that of your own knowledge? Yes.
1767. Were you in the heading? Yes; I was in No. 3.
1768. What doing? Fetching the tools out.
1769. How did you fire the shots in these places? The deputy fired them.
1770. You never fired them yourself? No.
1771. How did you tamp the holes? With slack.
1772. With slack coal? Yes.
1773. Was it dry? Dry or wet.
1774. If you could not get damp slack you would tamp with dry? Yes.
1775. Do you consider that manner of firing shots safe? Yes; that is the way I have seen them firing shots where I have been working.
1776. What way do you mean? The touch-paper.
1777. With fuse as well? Yes.
1778. Is there any danger attached to that do you think? Not much danger.
1779. No danger with touch-paper? No, not with touch-paper.
1780. Did you ever have any conversation with the deputy with respect to the condition of the mine and the quantity of gas? Yes; we were always making complaints to the overman and the deputy.
1781. With what object? To clear the gas away.
1782. Did you ask him to put up any bratticing? We never asked to brattice the heading, but to drive the air-courses.
1783. Don't you think that bratticing is the much better way? Yes; bratticing ought to be put in there.
1784. Did you ever suggest bratticing to the overman? No.
1785. You suggested the driving of the air-course? Yes.
1786. But you consider bratticing more effectual? Yes; everybody knows that no doubt it would be a good plan.
1787. On going through the mine on the Monday after the explosion, did you examine the places for gas or did Mr. Rowan or any of the others do so? I examined some of the places.
1788. Did you discover gas in any of the bords? Yes; I discovered gas in one bord and in No. 2 heading.
1789. Is that the second uppermost bord? I think it was the fourth bord; it is 42 yards long, without an air-course in it. I believe it is the fourth bord from the face.
1790. And you discovered some gas in it? Yes, but not much.
1791. Did you discover gas anywhere else? No, not in any of the bords, but we discovered it in the headings.
1792. Of course in Nos. 1 and 2 headings? Yes.
1793. You had not been working in any of these bords immediately before the strike? No.
1794. So you know nothing about these bords? No.
1795. Did you examine them on the Monday night after the accident, and the faces of Nos. 3 and 4 headings? Yes.
1796. Did you also go into the face of the tunnel No. 5? Yes.
1797. And into the face of No. 6? Yes.
1798. Did you discover any gas in any of them? No; all the faces were clear.

1799.

Mr. N. Hobbs. 11 May, 1887.

1799. Did you think it remarkable that they should be clear of gas after the explosion, when there was no circulating current, seeing that they contained a considerable quantity of gas before the strike? I can give no idea as to how they were clear of gas.
1800. You also went through that district with the men? Yes.
1801. You observed carefully and tested for gas in these bords? Yes.
1802. Did you observe any gas with the safety-lamp? I saw nobody look for it.
1803. You must have gone down with a pair of eyes with you? I had my eyes with me.
1804. When you went in on Monday after the explosion you discovered no gas in Nos. 3, 4, 5, and 6? No.
1805. Can you give any reason that no gas should exist in these bords and headings after the explosion with no circulation of air? No; I can give no reason.
1806. Don't you think it a little strange? Yes, it is strange.
1807. *Mr. Neilson.*] What is the greatest quantity of gas you have seen in No. 3? About 40 yards out I have seen it.
1808. Was that close out to the danger-board? Yes; from 10 to 15 yards from the danger-board.
1809. Was your lamp full of flame at the face? Yes.
1810. Was the lamp red-hot? I expect it was about red-hot. We used to fill our skip and then we would come back, because we could not stand it long.
1811. Did you fire the shots? No.
1812. Did you fire them in rolls and stone? Yes.
1813. Was there gas there then? Yes.
1814. And you were bound to fire shots in it? Yes; once when we were on these rolls White came in and the gas put his lamp out, and he went back 6 yards from the face and lit his lamp, he asked my mate if any of us had our lamps open, and my mate said "yes, my lamp is open," he then said "give us a bit of light."
1815. *Mr. Clarke.*] Who was your mate? Beckton.
1816. *Mr. Neilson.*] Are you quite sure the gas put his lamp out? Yes; I am sure.
1817. What sort of lamp was it? A Clanny lamp; we use Davy lamps.
1818. How did you fire the shot when gas was there? We used to fire them at night.
1819. Was the ventilation better at night? No; I don't think so.
1820. Would there be gas there at night? I suppose so.
1821. Did you ever brush the gas out? Yes; we used to brush it off when there was much there.
1822. Were you in the habit of brushing it out before firing? Yes; if there was any there.
1823. With all this gas were you not afraid of the fuse lighting it? We did not fire when all the gas was there.
1824. You said you used to fire in the stone? Yes.
1825. I suppose it was quite up to the face? Yes.
1826. And where the gas existed? There was enough to put White's lamp out.
1827. Where was it? In the right-hand cut, very near the roof.
1828. Your lamp was locked? Yes, mine was, and my mate's was open, and Mr. White told my mate to open his lamp and give him a light.
1829. *President.*] Where was this? In No. 3 heading.
1830. *Mr. Neilson.*] You worked in No. 5 last? Yes.
1831. Was there a large quantity there? Not much in the face, but plenty in the air-course that was turned away.
1832. *Mr. Hilton.*] Did you ever report the existence of gas? I sent out to fetch Mr. White in one day.
1833. How often did you report the existence of gas? Nearly every time he came down there. I reported it when there was 40 yards in No. 3 heading, and he told me to go on as I was strong enough to stand it.
1834. That was to Mr. White you reported it? Yes; and to Crawford the deputy.
1835. You never complained to any one else? No.
1836. *Mr. Owens.*] Did you ever complain about this to the inspector? Yes.
1837. What did he say? He told me to be careful and take care of it, that is all we got out of the inspector. I showed it in No. 3 and in the return. There was about 35 yards in the return, but I only showed it to him in the face of the heading.
1838. Do you know anything of the big blower? Yes, Crawford showed it to me; he asked me to come in and see it, and he turned on the cock and it put the lamp out, and the blower was coming out too strong to light; he then turned it on about half and it then lit.
1839. What was his object in doing that? I don't know; he only took me in and showed it to me.
1840. You are sure it was the deputy? Yes.
1841. *Mr. Jones.*] Am I to infer that your lamp was always locked? I was only working before the strike.
1842. During that time the lamps were always locked? Not always; if the deputy was there he would lock them, if he was not there he would leave the key in the cabin and you could do what you liked—if you lost your light while you were working and your lamp was locked, you could come out and go back as you liked with your lamp locked or unlocked.
1843. You never fired the shots yourself? No.
1844. How did the deputy fire them? With touch-paper.
1845. Was the bord that was 42 yards in advance of the air a violation of the law? Yes.
1846. And that was the only bord in which you discovered gas? That is the only one.
1847. *Mr. Clarke.*] Did Crawford tell you his object in fixing this pipe to the blower? I don't know.
1848. Did he ever say what his object was? No; he said nothing.
1849. Did Mr. White see it? I expect he did see it; I believe he would show it to the overman if he showed it to me.
1850. You don't know that he did? No.
1851. How long was the pipe there? I don't know.
1852. Did your mate see it? Nobody was with me when I was there.
1853. *Mr. Croudace.*] Have you ever worked in English mines? Yes; in South Wales.
1854. In fiery mines? Yes; where Davy lamps were used.

Mr. N. Hobbs. 11 May, 1887.

1855. Did you never fire any of your shots in this Bulli mine? No; never.
1856. Did you ever work by yourself? Yes.
1857. How did you do then? I used to go and fetch in the deputy.
1858. Was this when on day work? Yes.
1859. Have you ever seen him tilting his lamp to light the touch-paper? Yes; that is the way he used to light it.
1860. Is that a prudent or safe way of lighting shots in a fiery mine? That is the only way he did it.
1861. What do you think of it? I believe it is right enough.
1862. Quite right? Yes.
1863. Would it not be equally right to take the lamp top off? No; you need not turn your lamp right over for the touch-paper is supposed to catch fire through the gauze.
1864. In No. 3 heading you saw 40 yards of gas almost within 15 yards of the danger-board; is that correct? Yes.
1865. Was the danger board always at the last hole cut through? It was always supposed to be, but this one was back so as to act for four places.
1866. How far back from the last hole and cut-through was this danger-board? About 15 yards.
1867. And from the cut-through to the face was 40 yards? Yes.
1868. And that was standing full of gas? Yes.
1869. Was that the period when Mr. White took his lamp in and tried the gas? No.
1870. It was two different times? Yes; when White came in the heading was about 20 yards in at that time; he would never want a light again if he did that when there was 40 yards of gas in.
1871. When his lamp went out in the wick, you say he only went 6 yards back to light it? Yes, and I told him not to light it, as it was not safe there; but he was boss, and it was no good for me to tell him not to light it, or he would want to know who was boss, and a boss is no good in there if the workmen are going to rule him.
1872. And you have told us of the greatest accumulation of gas previous to the strike? Yes, that is the biggest quantity of gas I saw; it was in No. 3 heading.
1873. Was that quantity cleared away before the strike commenced? The most part of it was cleared away; the cut-through was put through, but it did not clear all the gas.
1874. How far was the stenton from the face? About 15 yards.
1875. Was any more work done in the face after the stenton was through? No.
1876. Why was the stenton not put right up to the face? Because the other heading was not up.
1877. I can quite understand that. Where was the greatest accumulation of gas, in Nos. 3, 5, or 6 headings just before the strike? In No. 3 there was about 8 or 10 yards, 5 feet wide and 4 feet high.
1878. Did you get more gas when you struck rolls? Yes.
1879. Were Nos. 5 and 6 standing full of gas when the strike took place? Yes.
1880. That gas has been cleared away since, and can you account for that by natural exhaustion? I can't give any account about that.
1881. Is it usual when you strike bodies of gas for these rolls to continue for a time giving off gas, or do they exhaust themselves? The gas dies away.
1882. So that during the strike the gas giving off from these blowers or rolls might exhaust itself, do you think that is possible? I don't know about that.
1883. Is it possible in your mind, seeing that you have got some gas on these rolls, to come suddenly upon a blower either in a drill hole or nick? You are very liable to come across blowers by drilling.
1884. And these blowers exhaust themselves in the course of time? Yes; they work themselves out.
1885. Do you think the exhaustion of gas in these headings may have been caused in this way? Yes; I suppose the gas would work itself all out.
1886. Have you heard of any inspection being made in this mine by the miners, as they have a right to do under the Act? No.
1887. Have you ever attempted to make any inspection? No.
1888. Are you not aware that the men have full power once a month to examine every mine in the colliery? I am aware that the men are supposed to go round at least once a month.
1889. Then why did not the miners in Bulli go round? I cannot tell you the reason.
1890. Was it idleness, indifference, or what was it? I never heard anything about it.
1891. Don't you care anything about it? Nobody asked me to go round.
1892. Do you know anything of your brother working with the top of a safety-lamp out? I know nothing about my brother; I was not working there at the time.
1893. What would you think of a man who went into a fiery mine where they had to use safety-lamps, and yet worked with a lamp that had a burnt-out top—bear in mind that the first gauze had gone, what would you think of such a man? They ought not to do it.
1894. Don't you think they were endangering the lives of every one in the colliery? Yes; but they were not very particular in this mine, not the boss's.
1895. Do you mean to tell me that the Bulli miners—intelligent men, as I suppose they were—did not value their own lives, your brother, for instance—do you mean to tell me that he does not value his life? I expect every man values his own life.

These things come to me as a perfect thunderbolt, for I never heard of them before. [*The witness withdrew.*]

John M'Kenna sworn and examined:—

Mr. J. M'Kenna. 11 May, 1887.

1896. *President.*] You are a miner? Yes.
1897. Employed in Bulli Colliery? No, sir; but I have been employed there.
1898. You reside at Bulli? Yes.
1899. You went in to rescue the men in the colliery? I was one of the first party that went in the mine after the explosion.
1900. We have had so much evidence of the conditions of the workings soon after the accident, and the position of the bodies when first found, that I do not propose to examine you particularly with reference to these matters. Were you employed as a miner in the Bulli mine subsequent to the strike? Not since the strike; I was there previous to the strike.

Mr. J. M'Kenna. 11 May, 1887.

1901. Were you engaged there up to the time of the strike? Yes.
1902. You cannot speak of your own knowledge of anything in the mine since the strike? No; not since the strike.
1903. But you were engaged there immediately before the strike. Where did you work? About the seventh or eighth bord towards the face in No. 1 heading.
1904. The seventh bord was the last bord? I could not exactly say how many bords there were. It was the second last at the time.
1905. Did you work in any other portion of the gassy section before that? Previous to that I worked here [*pointing out place on plan*].
1906. When was that? Three weeks before the strike.
1907. Where before that? [*Places pointed out on the plan.*]
1908. You drove the return through the dyke? Yes.
1909. And after that you were engaged in bords off Nos. 1 and 2 headings? Yes.
1910. In working these bords off No. 1 heading, did you use a safety-lamp? Yes; up to the time of the strike.
1911. Did you discover gas in these bords at any time? Yes; there was a large quantity of gas being given off in the bords in which I worked.
1912. You worked in the seventh or eighth bord? I cannot exactly remember the number of the bord, but I know it was the second last.
1913. And there was a large quantity of gas in that bord at the time? Yes.
1914. Was there in any of the other bords? I could not say, but there was a large quantity of gas in the heading face immediately below me, I could see that myself without going out of my way.
1915. Was the ventilation not sufficient to carry away the gas that was accumulated there? My place was off the heading, but the current was not sufficiently strong to carry all the gas away from my bord as it was brought round a number of other places.
1916. Have you been in the face of the heading where gas was given off? I have been in it.
1917. By working there, or through curiosity? I would occasionally go for the loan of tools.
1918. Where was the gas; was it contiguous to rolls? Sometimes it was, and at others it was not.
1919. Would a larger quantity of gas be found in approaching a roll? Very likely it would, for I did not take particular notice.
1920. Nothing but safety-lamps were used there while you worked? That is so.
1921. Were they locked? They were locked during the day-time.
1922. Were they locked at night? You could please yourself.
1923. Did you work at night? Yes.
1924. Did you fire any shots? Yes.
1925. Did you fire them at night? Yes.
1926. How would you proceed when firing a shot? We would light the touch at the side of the gauze and fire the fuse in the usual way.
1927. Did you go outside the danger-board? When in the headings the men went right outside the danger-board.
1928. Then you proceeded in with the touch-paper and lit the fuse? Yes.
1929. Did you consider there was no danger attached to firing that fuse in an atmosphere of gas? I was aware of the danger of lighting touch-paper on the gauze of a safety-lamp.
1930. How did you tamp the holes? With soft stone whenever I could get it.
1931. Suppose you could not get it? I would go back to the road and get some cake-dirt that had moistened itself.
1932. Are you aware, or have you been informed that some men tamped with small coal or slack in a dry state, and if so, would you consider that a safe proceeding? It is both unsafe and stupid.
1933. And I quite agree with you. Had you ever had any occasion to complain to the colliery officials as to the state of the bords, or the ventilation? No, sir; that was not my duty. I was supposed to use a pick and shovel only.
1934. Have you thought the people were too careless with the use of safety-lamps? The only occasion that I complained to Deputy Crawford was about eighteen months ago. I could not exactly say, but at that time I was working 80 yards in a bord in advance of the air.
1935. Where was it? [*Place pointed out.*] That was not in the gassy section? No.
1936. No connection with the gassy section? No.
1937. That must have been some two years ago? I think it might be about eighteen months ago. I don't think the gas was struck at the time, but the ventilation was so bad that I could not sit down without falling asleep, and after making several complaints to the deputy he removed me out, and put me to work in another place.
1938. Did you ever make any complaint to the Colliery Inspector about the gas? I never did, simply because I would be exceeding my duty by doing so.
1939. Do you really think so? The management take it as their duty, and I know they consider it as such.
1940. Do you mean to say that it would not be your duty to report anything that you found to be dangerous, or to complain of it? The question is, would I be permitted to make such a complaint, and if so would it be entertained?
1941. You think it was not your duty to complain? I say I had no real occasion to complain, and I say that if I did the complaint would not have been taken from me—in other words, it would not be entertained.
1942. You can know nothing about it then if you had no reason to complain? I had some idea of the management.
1943. *Mr. Hilton.*] Was there anything which caused you not to complain? Not in my time. The obstacle referred to has been brought into existance since the strike began.
1944. You have been several times in the mine since the explosion? Yes.
1945. Do you know the door on the western road? Yes.
1946. You know there used to be a door there? Yes.
1947. Suppose that door was damaged by an accident and knocked down, would it affect the ventilation in the Hill End district? Yes, and cause foul air at once.

Mr. J. M'Kenna. 11 May, 1887.

1948. Where would the air go in the event of that door becoming damaged? The air would go to the western.
1949. You have been in the western since the explosion? Yes.
1950. And in the Hill End district? I have been all over the two districts.
1951. Have you been all over the mine? I have been all over the three sections, the western, the gassy, and the grip, but not in the grip further than the furnace since the explosion.
1952. *Mr. Owens.*] You were one of the first party that went into the mine after the explosion? Yes.
1953. Did you find any of the bodies burnt? Yes; the first I discovered was burnt—Felix Bourne—he was badly burnt.
1954. Where was he? A few yards outside the brake on the bank heading.
1955. Did you examine the bodies found in Nos. 1 and 2 headings? Well, there were several bodies in No. 2 heading badly burnt.
1956. You proceeded from there to the western? From No. 2 I proceeded along the flat and got the bodies that were along there.
1957. Were they burnt? There were two boys; one of them was found beneath a skip, and one of them was badly burnt.
1958. Did you notice whether the bodies found in the western were affected by fire? No, I did not, though I believe they must have been burnt.
1959. Do you know these rules? Yes.
1960. Do you know No. 6, as to "Interference by employees"? Yes.
1961. Do you consider that reporting would be an interference according to that rule?
1962. *President.*] The witness did not work there when these rules were brought into operation.
1963. *Witness.*] I have been examined on that subject before.
1964. *President.*] It does not matter.
1965. *Mr. Owens.*] Were check inspectors appointed by the Bulli miners? No such officers were appointed in my time.
1966. *Mr. Jones.*] Who were the first party that went into No. 1 heading? Mr. McCabe had charge of a party, and they were a little in front of me.
1967. Did you arrive at the heading before the body of Millwood was removed? Yes; I was twice there before the body was removed.
1968. Could you point out the exact spot where the body of Millwood was found? [*Place pointed out on the plan.*]
1969. Would you be surprised to learn that it has been alleged that he was found on the out by-side of this spot?
1970. *President.*] I do not think it has been alleged at this court of enquiry.
1971. *Mr. Owens.*] In reference to the blower in No. 2 heading it has been alleged that Crawford fixed a pipe there. Do you know anything about that? I did not see it done, but I believe it was the practice.
1972. *Mr. Hilton.*] You heard of it? Yes.
1973. *Mr. Croudace.*] Have you known of any great accumulation of gas previous to the strike? Yes, in the left-hand heading, now called No. 6, I believe.
1974. Where is it? Going towards the dyke.
1975. How long is that ago? It was there at the time that we came out on strike. I saw the gas there the last night I worked, and I believe that was on the 10th of September.
1976. Are you speaking of No. 5? I am speaking of No. 6.
1977. Will you point out the heading? [*Heading pointed out on the plan.*]
1978. Was that gas there when the colliery stopped work? Yes; it was on the 10th September, and I think the strike commenced on the 11th—next day.
1979. Do you know of any other accumulation in the mine? On the same night there was a large accumulation of gas in No. 1 heading, immediately below where I was working.
1980. Was it there the following day? I was not working the following day. I took my tools out that night. The men working there prepared a shot, and requested Crawford the deputy to fire it. He refused, and that shot was left unfired.
1981. Who was the man who prepared the shot and asked the deputy to fire it? Bill Gard.
1982. Who was the deputy? Crawford. Gard's mate came in the same night, and Crawford would not allow him to work there, and took him away to work the last shift.
1983. You know that of your own knowledge? I saw it.
1984. That was the night previous to the strike? Yes.
1985. Would the bratticing of these places have prevented such an accumulation of gas? Yes. In my opinion, if they had been bratticed, the gas would not have been made there.
1986. *President.*] By bratticing, you mean to say that the gas would have been swept away as it was made? Yes, it would have been carried away.
1987. *Mr. Croudace.*] Have you known the gas to light by a shot? Yes; the week previous to that Bill Gard fired a shot in No. 1 heading, which lit the gas.
1988. *President.*] Was he lost? No; he is working in one of the neighbouring collieries.
1989. *Mr. Croudace.*] What did you say the result of his firing the shot was? To fire the gas.
1990. Where? No. 1 heading.
1991. *President.*] That was before the strike? Yes; a week previous to the strike.
1992. *Mr. Croudace.*] Did it do much damage? No.
1993. *President.*] Did you see it yourself? Yes.
1994. *Mr. Croudace.*] Then you are quite satisfied that a shot may light gas? Yes; I saw it.
1995. You have heard that it was the practice, and you have expressed your opinion about lighting shots by tilting the lamp to ignite the touch-paper? It is a bad practice.
1996. I quite agree with you. What do you think of the sworn testimony of two or three men having worked with the main gauze of the safety-lamp burnt out—what would you think of men who actually worked with that lamp in a large quantity of gas? I would think that it was a very unsafe thing, and that practically the man had no safety-lamp.
1997. *President.*] That they were reaching high for an explosion? Exactly.

Mr. J. M'Kenna. 11 May, 1887.

1998. *Mr. Croudace.*] I should like to examine this witness with a view of getting his interpretation of No. 6 rule, having reference to interference by employees. I have an impression that the intelligence of this witness will lead him to see that it bears a different construction.
1999. *President.*] I don't think it should come out in this court, as the witness never worked under these rules.
2000. *Mr. Croudace.*] When you get really an intelligent witness, who might not have given much consideration over this rule, it is quite possible that he would give a fair interpretation of it when it is placed before him. This witness has given testimony with respect to this rule at the inquest; I would like to know now whether he is under a different impression.
2001. *President.*] Of the intelligence of this witness there can be no doubt.
2002. *Witness.*] I have been in the mine several times since the explosion; perhaps it is as well that I should state all I saw.
2003. *President.*] We do not think that another detail description of the tunnel and workings or the condition of the bodies would be of value; but if you communicate with me as to what further evidence you wish to give, we will consider it, and we can recall you if necessary.
2004. *Witness.*] I would like to give you my opinion as to cause of explosion.
2005. *President.*] Oh, we will have that.
2006. *Witness.*] I am of opinion that the explosion occurred in No. 2 heading, and that previous to the explosion a shot was fired there, and that the force of that shot drove the gas out to a naked light in No. 2 heading, and that that naked light was the cause of explosion. I have examined the course the explosion has taken, and find that it has gone straight out of No. 2 heading as if out of a cannon. The left-hand heading being immediately opposite, it carried a man, three boys, and horse a distance of about 50 yards. I am of opinion that during this strike the workings in that old left-hand heading became fouled with gas, and that the gas having lodged there, it was impossible for it to be taken out, unless put out wilfully; in other words, that the ventilating current of the mine did not reach it. I believe that the flame of the gas from No. 2 heading, which was ignited at the naked light, communicated itself with that other accumulation, and it exploded, also causing damage all along the road, in the first place death, and the second place destruction.
2007. *President.*] Have you any knowledge as to the behaviour of coal-dust in the presence of ignited gas? Perhaps you will allow me to finish. After the ventilation was restored, it was impossible for the gas that may have accumulated in the workings of this disused heading to be taken out, unless put out by some special means, and I am of opinion that that was not done.
2008. Can you say that it was not done? It was a disused part of the workings, and the air does not go around these workings.
2009. Have you been in these old workings? I have.
2010. Did you observe any gas there? I believed it was lodged there, and that it was beyond the reach of the ventilation; but when the explosion occurred it ignited there.
2011. Did you see any evidence of an explosion there? I have.
2012. Where? There is proof in the fact that the fire of the blast went to the western.
2013. We saw that, and I think we were together when we saw it? The blast, I believe, divided itself there, one portion reaching the main heading face, and travelling out to the tunnel mouth, and in its course upsetting the skips in such a way as to indicate that the force had come outside. The other portion of the blast went to the western, and that second portion was likely to reach the tunnel mouth a little later than the first, from the Hill End straight.
2014. You are of opinion that the explosion commenced in No. 2 heading? What I say is that the fire lighted some distance outside the cut-through. I picked up a man who was blown by the force of the explosion at that point; he was just on the main road. I am of opinion that the gas was lighted by that man's naked light.
2015. Did you see the evidences of an overcharged shot in No. 2 heading? I saw no appearance of an overcharged shot. In my opinion, the shot was a good one. There was not a great quantity of coal blown down by the shot, but that standing in the face is hollow behind; and if the shot had been overcharged, it would have knocked the coal into slack. [*The witness withdrew.*]

THURSDAY, 12 *MAY*, 1887.

Present:—

DR. ROBERTSON, PRESIDENT.

MR. O'MALLEY CLARKE,	MR. JONES,
MR. NEILSON,	MR. OWENS,
MR. CROUDACE,	MR. HILTON.

Wm. Bolan Green sworn and examined:—

Mr. W. B. Green. 12 May, 1887.

2016. *President.*] You have been for many years a colliery manager, Mr. Green? Yes; about fifteen years. I have been thirty-eight years engaged in coal-mining altogether.
2017. In this Colony, or in England? In both.
2018. In what district were you in England? In the north of England—Northumberland.
2019. You are acquainted with gassy mines? Oh, yes.
2020. When did you hear of this disaster at Bulli? Well, I got out there at about 9 o'clock that evening, and I was not five minutes there before I went inside.
2021. Will you describe to us in your own way—here is a plan of the colliery—where you went and what you did? When I first went to the mine I volunteered my services to go in, and I did so, taking canvas with me, and the first thing I did was to go to the furnace, and finding that it was working all right I was quite satisfied there was no danger, so I came back and went up to the large fall—that is past the western,

Mr. W. B. Green. 12 May, 1887.

western, and is what they call the "big fall." I inquired if any men had gone over it, and was told that two men had gone over, a proceeding which I characterized as foolishly risky. It was, in my opinion, to commence clearing the fall in order to let the ventilation over, and I told the men who were on the top to call them back. When they came back I told them I was there to give instructions, and the best thing they could do was to clear away the top of the fall. They said they would commence to do that, and I then came outside, and saw Mr. Ross, who was complaining of being unwell. He asked me if I would go into the furnace with him? I said yes, and accordingly went back to the furnace with him and examined all round.

2022. Was there any change in the ventilation then? There was in the main road; the ventilation had improved. At my suggestion we went up to look at the fall again, and we then consulted as to what was best to be done to get the bodies out; we then proceeded out again, and met Mr. McCabe and Mr. Evans coming in; we consulted with them, pointing out that we thought it would be best to clear away the smallest of the falls to get the bodies over, and they were satisfied that such was the best thing to do under the circumstances.

2023. And did that finish that night's operations? Yes.

2024. In going in towards the western, Mr. Green, did you observe the bodies that were lying on the bank-head? I did.

2025. There were six bodies lying there? Yes.

2026. Did you observe the condition of those bodies? Yes; they were burnt.

2027. What evidences of burning did they show? The hair was singed on the face and head, and the skin seemed to be burnt in some cases.

2028. There is no doubt in your mind about the condition of these men—did you examine them narrowly? I have no doubt. There was one very big man lying on the crossing, his face being covered with a bag. I took the bag off and examined him. There was another one lying there with no clothing on him; he was burnt also.

2029. You are quite aware, of course, that the hair will show the first symptoms of burning? Yes.

2030. And you found unmistakable evidence of burning? Yes.

2031. Then I suppose you came out and saw that the shifts were properly arranged? Yes.

2032. And when did you return? About 2 or 3 o'clock we went to have a rest, and in the morning we went in again. The big fall was partly cleared, but not to our satisfaction. Mr. McCabe and I went over the fall, and found the bodies of two boys.

2033. You were the first to come on them? Yes; Mr. McCabe and I were the first. I never heard of the boys being seen by anyone else.

2034. Was one of them entangled in the ropes? No; they were on the opposite side.

2035. What was the condition of the bodies? They were burnt.

2036. In proceeding along the main road did you notice the condition of the props? I did not; my principal anxiety was to push forward.

2037. You say these two boys bore evidences of burning. Did you examine them particularly, and if so what evidences of burning did they bear? They seemed to be burnt about the hands. I noticed the hands more particularly than anything else.

2038. Might you not have been led astray by their hands being abraded? No; they appeared to be burnt.

2039. Suppose they had been drawn along the wires now. Did you see their hair? No; I noticed their hands mostly.

2040. Then you are not quite certain about it? Well, I will not be positive, as I did not examine their bodies so particularly.

2041. You arrived through the dyke at No. 1 heading? Yes.

2042. Did you see anything there? We put up two or three stoppings that had been blown out. We then proceeded to the main heading.

2043. Were you the first to come upon the bodies in No. 1 heading? Yes.

2044. Did you take a note of their positions? I did, though we had only a piece of brown paper in which nails were wrapped; but I made a copy on coming outside.

2045. Have you got that copy? No; I gave it to McCabe.

2046. Can you recollect the names of the men? No; I cannot.

2047. Give us the number then. In going up No. 1 heading how far did you go before you came to the first of the bodies? In the first bord we got to in No. 1 heading there was a group of four, three of them were lying in the middle of the road, and one was sitting by the side of the wall, as if he were asleep. This we supposed to be the deputy. I put my lamp to his face. The men who were with me, I think, said it was the deputy, and I thought so by the way he was dressed, differently from a miner.

2048. Did you notice the appearance of these four men? I noticed one of them who seemed to be burnt on one side.

2049. Was it black? No; of a reddish colour.

2050. What about the hair? The hair was singed of one man lying with his head between two props.

2051. Did Millwood, or the man supposed to be Millwood, show evidences of burning? No; I saw no signs of burning on him.

2052. Was this other man that you suppose to be burnt lying in such a position as would convey the impression that he had run some distance? Yes; I should say he had run some distance.

2053. Then you proceeded up the heading, and where did you come upon the next group of bodies? We came across three lying in the next bord.

2054. Were they burnt? I did not take particular notice.

2055. How were they lying—with their heads backwards? Yes; as if they had been suddenly overtaken.

2056. Did you notice whether they were burned? No.

2057. Then what did you do? After going into the third working bord, we came out into the main working heading, and found a body lying on the road at the fourth working bord. Proceeding into that bord we found another body lying at the face. We found two bodies at the fifth working bord, and two at the sixth.

2058. Did you see any evidence of burning upon these two at the sixth working bord? No; but I examined the timber there, and found it charred.

2059. Then you went up to the last stenton? Yes.

2060. What did you see there? We found the body of Westwood just at the corner. He was a worker in No. 2 heading. He was lying on the top of some rubbish or small coal.
2061. Did you see the danger-board here in No. 1 heading? Yes, I did; on the board was written "danger beyond this point." There was a horse and a boy just inside.
2062. Did you observe whether the horse and boy were burnt? No; I did not. We were very glad to get out, the air being bad.
2063. How many bodies did you find? We found sixteen or seventeen altogether.
2064. I think in going up the heading a group of five was found;—in the second group you came upon you mentioned only three? Yes; but there were two close to them.
2065. Did you go into the face of No. 1 heading? No.
2066. Did you go into the face of No. 2? No; I did not.
2067. Did anyone relieve you before you returned? No; by this time we found ourselves pretty well knocked up owing to the after-damp, and we went on to the main heading and sat down for a time.
2068. Were the workings hot at the time? Not very hot; just the ordinary warmth in the bords.
2069. Did you anticipate finding it as warm after what had occurred? Yes; I thought it would be worse than it was.
2070. Did you return to that part of the workings? I did not go downthen any more that day. Mr. McCabe told me that I had better get the men to clear away the falls so as to convey the bodies out. On the Friday, Mr. McCabe and I went down to No. 3 and No. 4 headings along with Mr. Ross.
2071. Did you find anything in No. 3 and No. 4 headings? I found a safety-lamp in No. 3 heading.
2072. Who was with you at the time? Mr. McCabe and Mr. Ross.
2073. What was the condition of the safety-lamp? The lamp was broken. The gauze was smashed as if some one had stamped on it.
2074. Was it unlocked? Yes.
2075. Was it unscrewed? No; it was intact.
2076. In going into No. 3 and No. 4 districts on Friday in company with Mr. Ross and others, did you examine these places for gas? Yes.
2077. Did you discover any? Not the slightest.
2078. Did you see any evidences of burning along the main tunnel, or in Nos. 3 or 4 or No. 6? I did not notice. The only place I examined for fire was in No. 4, and I saw evidences of charring there.
2079. When did you first go into No. 2 heading? I have told you how I went in, and of course we went through the stenton; but I did not go to the face.
2080. Did you see any evidence of fire in No. 1 or No. 2 on that occasion? No.
2081. You did not specially test for it? No.
2082. When did you first make a circuit of the workings? I went up to the western on Friday, through the return, our object was to see if the overcast was broken down.
2083. Had any other person been in the western before you? No.
2084. Having gone into the western how did you proceed? We proceeded along the western air-course, and travelled up the overcast.
2085. Did you notice the door at the junction? Yes.
2086. What condition was it in? It was broken and tilted up.
2087. In what condition did you find the main western road? We found a large fall on the top of some skips, and we made a sketch of the position, and we then turned back on to the gassy.
2088. Then you did not go through the western on that day? We did, in the afternoon.
2089. Who accompanied you? Mr. McCabe and other men.
2090. What did you find in the western? We found in a place going down to the left-hand and on the outside end of the flat, two bodies—that was outside the overcast
2091. There are two bodies marked on the plan as having been found in the air-crossing—is that so? I do not know of anyone having been found there. The first body we found was 40 yards or 50 yards in the flat, and near the water tub. It was just behind the tub. And next we found a boy, and going straight in for 4 or 5 yards we found another. Then Mr. McCabe and I had another conversation, he suggested that we should get the bodies out as quickly as possible, and asked me to get stretchers, &c., for that purpose. So I was not in the pit any more until Saturday morning.
2092. And on the Saturday morning you were accompanied by whom? By Mr. M'Kenzie, Examiner of Coal-fields; Mr. Dixon, the Inspector; Mr. Rowan, Inspector of Collieries, and Messrs. Neilson, Ross, the Manager, Evans, and Gardiner, I think.
2093. Then I suppose you made a minute examination of the workings with a view to arrive at a knowledge of the cause of the explosion? Yes, and the seat of it.
2094. Very well, did you go into every part of the workings? Yes.
2095. Who went up to the face of No. 2 heading? Mr. Evans and Mr. Dixon.
2096. Did they report the presence of gas? Yes.
2097. Did they report anything else? No; not to my knowledge.
2098. Did you hear of any loose powder being found in No. 1 heading? No; I did not.
2099. Were you aware on the Saturday of a shot having being fired in No. 1 heading? Yes; I was told there had been a shot fired.
2100. That is to say those sent up to examine the face of No. 2 heading reported that a shot had been fired? Yes.
2101. Going down No. 2, did you see any convincing evidence of an explosion having taken place? Yes; I was quite satisfied that an explosion had taken place. There was evidence of the course it had taken by the charring on the props, and the skips were knocked about.
2102. In coming down this diagonal road, between Nos. 1 and 2, did you observe anything special there? I noticed that the skips were tossed about?
2103. Did the positions of these skips convey to your mind the idea that they had been passing through the door at the moment of explosion? Yes.
2104. Did you notice anything peculiar about a stopping just inside the junction of No. 2 with the main tunnel? No; I did not.
2105. Did you notice that it had been blown in? No; I did not notice that.
2106. Did you again examine Nos. 3 and 4 headings? Yes.

Mr. W. B. Green. 12 May, 1887.

2107. And what was your opinion as to the seat of the explosion? In my opinion a considerable accumulation of gas had been fired by a shot in the face of No. 2 heading; that the course of the explosion was down No. 2 heading, and in its road down had proceeded towards No. 1, and then came down on to workings marked on the colliery tracings with an A. I am of opinion that at this point the current must have been fed with an additional supply of gas; I do not think there was sufficient gas here [*pointing to plan*] to have caused the destruction that I noticed.
2108. Then how do you account for a man being burnt in No. 1? Well, when this stopping was blown out, the explosion would extend in that direction.
2109. Then, in your opinion, there were two currents—one going down No. 1 and one down No. 2, joining in the tunnel? Yes.
2110. And that the combined forces burst out the stopping? Yes; and projected the horse and man through the stopping.
2111. Then you have a fixed opinion as to the story of an explosion having occurred in the district below the tunnel marked A on the plan? Yes.
2112. Did you see separate evidence of an explosion in this place? Yes; I am quite satisfied in my own mind that there must have been an accumulation of gas in one of these old bords.
2113. Supposing it had taken place in any of the three bords marked as going back towards the dyke in district A, what course would it have taken? It would go against the air.
2114. Would it not have had a tendency to blow the stopping the opposite way, as well as the horse and man? No; I do not think so.
2115. In which case, where would it travel? It must have gone into the main road here [*pointing to the plan*] and down to Nos. 3 and 4.
2116. Did you see any evidence of charring there? No.
2117. Would it be possible for the same results as have taken place to have been occasioned by an explosion in No. 2 fouling the intake aircourse—in other words, would these men in Nos. 3, 4, 5, and 6 have been likely to have been killed by an explosion in Nos. 1 and 2 alone fouling the intake air? If there had been any gas coming from here [*position indicated*], the after-damp would have been safe to kill the men.
2118. As a matter of fact, however, you found upon examination on Friday no gas in Nos. 3, 4, 5, and 6? No.
2119. From your experience, would you anticipate that when the air current was deranged would be the most likely time to find gas? Yes; you would be most likely to find the gas when the current was not in its normal state.
2120. Do you incline to the belief that gas did exist is Nos. 3, 4, and 6? Yes; I have no doubt about it.
2121. But you say you found no gas in those places? On the Saturday morning—yes, that was so.
2122. But was not that a likely time to have found the gas? Yes, and more especially in No. 6, as it was going over a fault.
2123. Precisely, and from your knowledge of the district, would you anticipate finding gas contiguous to these rolls or faults? Certainly.
2124. Were you acquainted with this district—that is, with the Bulli Colliery—before the accident? No, I was not—yes, the first time I went over it was subsequent to the explosion.
2125. If you were told that in Nos. 3, 4, and 6 headings gas existed before the explosion, would you expect to find gas in the same positions after the explosions? Not for some time after.
2126. Why not? Well, the gas would be taken out by the explosion.
2127. Would the lapse of two days be sufficient? Yes, I should say so.
2128. Then, would the fact that you found no gas after the explosion convince you that the statement was correct if you were told that there was no gas in those places before the explosion? Yes; I cannot say anything contrary to that.
2129. Then I have only a general question to ask you, Mr. Green; you say you had no knowledge of this particular district of Bulli before the explosion, but you have great experience, I know, in working in fiery mines; have you heard of the practice of shot-firing pursued in the Bulli mine? I have since the explosion.
2130. Would you consider it a safe method to tamp with dry coal-dust? No; I do not think it is safe to fire a shot were gas exists.
2131. But do you consider there is any special danger in fuse, which is the means by which, we are told, the shots were fired at Bulli; would it alone fire the gas? Yes; if the shot were overloaded.
2132. Do you consider it a safe operation to fire shots by turning the flame of a safety-lamp against the gauze? No.
2133. Would that be equivalent, in your mind, to communicating the flame from the inside to the outside? Yes.
2134. Would tilting the flame against the gauze be liable to destroy the gauze? Yes.
2135. And the destruction of the gauze would be a source of danger? Yes; it would be a danger, certainly.
2136. Would it destroy the utility of the lamp? Yes.
2137. With your extensive knowledge of this district, would you be astonished if I were to inform you that men working in places known to contain gas would work there with the top of the gauze removed from a lamp? Well, I think if men were inclined to do that I should like to be outside.
2138. Did you see men that you think would have acted so? No; not to my knowledge.
2139. In a district where the lamps were on some occasions red-hot, do you think lamps could so exist without causing an explosion? They might, but I do not think it should be allowed to continue.
2140. Was that an indication that the flame should be pulled down, and the people removed from the mine? By all means.
2141. In that condition of affairs what would you think of people knowing the properties of gas and the use of the safety-lamp who would work with the top of the lamp removed? Well I should think if men understood gas and did such a thing as that they were trying to commit suicide.
2142. Now I ask you (for I do not know anyone who has a more thorough knowledge of the district than you have) did you ever meet men in this district so careless as to do such a thing? Well I have met careless men in connection with gas. We had a little gas at Mount Kembla, but I do not know whether it would be right for me to give that.

2143. Did you find gas in those bords off No. 1 and No. 2 on the Saturday of your inspection? No, none at all.
2144. In your opinion, had a large quantity of gas been fired in No. 2? I believe that the gas had been almost back to the stenton?
2145. Was that a large quantity of gas to produce such disastrous consequences to human life? I do not think there was sufficient gas there to have effected so much.
2146. Do you know anything of the part which coal-dust would play in an explosion? Yes, something.
2147. Do you think it would communicate flame from one part to another, and explode distant magazines of gas? Yes, that is my idea.
2148. Then if (say A) an explosion took place, it might, through the medium of coal-dust, reach a distant locality though no gas existed between? Yes.
2149. And in that way it might be a powerful factor in producing disastrous explosions? Yes.
2150. *Mr. Neilson.*] On the Saturday, when you were in, Mr. Green, did you observe anything in No. 1? I went into the stenton, and I left Mr. McCabe standing by a horse there.
2151. You are quite certain that the seat of the explosion was in No. 2? Yes.
2152. But that it was assisted by meeting with additional force on the way? Yes; it must have met with a reservoir of gas in these old workings.

[NOTE.—The reservoir in question consists of two bords, about 15 yards in length, between the two returns. Mr. Green explains, however, that he did not examine for the presence of gas in the situations he mentions; his remarks on this point being pure hypothesis.

Witness's attention being directed to the plan, he further explained himself by that means.]

2153. *Mr. Neilson.*] Do I understand you to say now, Mr. Green, that, notwithstanding the opinion you have expressed as to the cause of the accident, and where the explosion was conveyed by separate reservoirs of gas, that the most probable position in which to find gas after the explosion was in the face of Nos. 3, 4, and 6, and probably No. 5? Yes.
2154. *Mr. Hilton.*] From what you have seen, Mr. Green, do you think it necessary in such cases to erect brattice to carry the air to the working face, by way of precaution, for instance? Well, I believe it was necessary in No. 1, in view of gas being there. I believe precautions ought to have been taken from the last stenton to the face.
2155. You are aware that in a mine which gives off gas the quantity given off varies considerably—sometimes it is more than at others? Yes.
2156. That being so, you think it necessary to erect brattice in order to prevent accident occurring? Yes.
2157. I suppose you have a knowledge of the means by which this mine was ventilated? Yes.
2158. You are aware that there was a door placed on the western road at the western junction? Yes.
2159. That was for the purpose of ventilating the Hill End district? Yes.
2160. And that door would be liable to get destroyed providing the trapper boy neglected to open it, say? Yes.
2161. And suppose the door became injured and would not work, would not the effect be to diminish the ventilation to the Hill End district? Yes.
2162. Do you think the door could have been placed in a better position? It might have been placed inside the western flatt so as to avoid the engine train; and if that had been so all these stoppings (*pointing to plan*) would have been scaling the air—that would have been all the difference.
2163. Supposing the door had been placed in the western return so as to admit sufficient air for the men in the western district, and supposing the stoppings were all secure, it would have been better in that case, would it not? Yes.
2164. And by that means there would have been less liability to accident? It would have been less liable, I suppose.
2165. Owing to the position the door occupied at the time of the explosion, if anything occurred to it, as you said before, it would necessarily destroy the ventilation to the Hill End district? Oh, yes, certainly. If the door were placed inside the flatt, as I have suggested might be done, it would be opened so many more times than on the main road.
2166. *President.*] It depends upon the number of skips or trains that pass through? Yes.
2167. *Mr. Hilton.*] You did not understand me, Mr. Green. You know that the return airway is on the out-bye side or towards the furnace side of the main workings. If the door was placed in the return airway it would not be interfered with by the transit of skips and so forth? I understood you to speak of having the door placed in the return inside the main road.
2168. Yes; but by placing it there, I say it would not be subject to frequent openings? No.
2169. *President.*] Could it be placed in the return, that is the point? Of course I could understand having the door placed in the return, but I would not approve of it myself.
2170. *Mr. Hilton.*] Would not approve of the door being in that position, and yet you have said you thought it would be better to be there? Oh, no, I did not; at least I did not mean that.
2171. You said that where it was it was liable to be damaged? Yes; there was that danger.
2172. There was also danger in the boy not being there to open it and a set of skips running against it Yes; no doubt.
2173. It might also get disarranged on account of frequent use? Yes.
2174. And if it were placed in the western return it would be free from liability to such dangers? Yes, no doubt; but I do not think it would be well to place it there.
2175. *Mr. Clarke.*] Would it be as servicable? No; I do not think it would.
2176. *Mr. Owens.*] When you entered the mine first which way did you go—up the left-hand side, through the return? Yes.
2177. Not over the Big Fall? No.
2178. Were you there at all? No. I made enquiries of Mr. Ross why we did not go there, and he said there was a very large fall and we could not get there.
2179. Did you see it? No.
2180. You noticed a smell? Yes; when I went to the furnace.
2181. You have smelt fire-damp before, and powder and dynamite, I suppose? Yes.
2182. Did you detect any smell like that of powder and dynamite on first entering the mine? No.
2183. Would it be possible for hot air to be sent to the Hill End district to cause the singeing of those people in the western district without a good deal of fire? No. 2184.

Mr. W. B. Green. 12 May, 1887.

2184. Taking into consideration the state of the mine and the bodies, do you consider sufficient gas could or did exist in No. 1 heading to produce such effects? No; there was not sufficient gas in No. 1 and No. 2 headings to cause the destruction that there has been.
2185. Do you think coal-dust would ignite of itself, or do you think it would require to be dissolved by the ignition of gas? Certainly, in my opinion, it would require gas to make it explode.
2186. Do you of your own knowledge know of such a thing as a powder magazine to be kept in the mine? No, I never did.
2187. *Mr. Jones.*] To come to No. 1 heading I suppose you observed the danger-board? Yes, placed at the last stenton.
2188. In your opinion as a practical man, would it not have been a greater precautionary measure to have had those boards placed at a greater distance from the working places? Yes.
2189. That is, so as not to admit naked lights? Yes, I should say it would.
2190. You have said that you think the system of firing shots with a fuse, and lighting touch-paper by tilting the lamp a bad system? Yes.
2191. Would you recommend that the practice pursued in England, that of having some person in authority to fire the shots, should be followed here? Yes, I think so.
2192. You observed, on going into the mine, some stoppings blown out? Yes.
2193. Did you notice of what material the stoppings were composed—were they built of stone and filled in with small coal? Yes, they were good strong stoppings?
2194. Do you think stoppings of that character of a sufficiently good kind for conducting the air in large collieries? I believe all main roads ought to have good brick stoppings with a reasonable amount of backing up.
2195. *President.*] That is in the absence of good building stone, I suppose? Well, they are often better filled in with stone.
2196. *Mr. Croudace.*] As a rule are safety-lamps used where the existence of gas is known, or the fear of gas exists? If gas has been seen safety-lamps are used.
2197. Do you consider all men equally careful in using safety-lamps? No.
2198. Do you consider it prudent or safe to allow lamps to be unlocked? ———
2199. I asked you that particular question, Mr. Green, because I think you must have misunderstood a question in reply to which at the inquest you said that safety-lamps were as safe unlocked as locked? I say they are safe so long as they are not unscrewed.
2200. I ask you again, knowing that all men are not careful in gassy mines, do you consider it prudent or safe to allow the lamps to go in unlocked? No.
2201. That is a distinct contradiction to your statement at the inquest? I think my statement at the inquest was just the same, namely, that the unlocked lamp is safe, provided it is not unscrewed. But my opinion is that no man ought to go past the lamp cabin without his lamp being locked, and a man should be stationed there for the purpose in mines where safety-lamps are used.
2202. In answer to a question at the inquest you said, "A safety-lamp unlocked is just as safe as it is locked"; and now I understand you to say, as to a lamp in a gassy mine, that it is not as prudent to have it locked as unlocked? Not at all.
2203. Then do you consider it as prudent in a gassy mine to have the lamps unlocked as locked? No.
2204. You have expressed your opinion about tilting the lamp; now, do you consider it safe to use the ordinary needle and squib in firing a shot? I do not think it is safe in a case like this.
2205. Have you ever known a shot to light up gas? Yes.
2206. With what material would you recommend shot to be fired in a gassy mine—that is, damped or undamped? Damped, certainly.
2207. Would you use coal in the ordinary way, small coal or shale? Shale is always considered the best; but, in general, small coal is used.
2208. Now, to come to the question of the ventilation of this mine. You have been asked about the western door; would it not have been better to have two doors on the western? Yes.
2209. Did you notice whether there was a door between No. 1 and No. 2 on the main road? There had been?
2210. Would it have been better to have two doors there? Yes.
2211. In all cases it would be better? Yes.
2212. Now, I would just like to take you to your opinion about the explosion. You are of opinion that she fired in No. 2, dividing herself in going along the road into No. 1, pierced a stopping here on the main tunnel, a portion going on to the main tunnel, and that at length she fired a small accumulation of gas in two abandoned bords to the left. You observed that the stopping on the left-hand side was blown upward; did you observe which way these stoppings were blown into the face? No. A train of skips was standing there, and I was never down that side.
2213. Do you know or have you heard whether those bodies found at the point where you think she gathered the gas, were those of men who had been working there? They were mostly boys.
2214. Had the boys been working there, do you think? Yes; because the horses were there.
2215. As a matter of fact, did you observe a stopping on the left-hand side of this heading off the main road, and immediately beside No. 2 heading—right through there? I did.

[Note.—Reference was here made to the plan, and Mr. examined the witness as to the probabilities of supporting his hypothesis of a separate explosion.]

2216. You have told us that the explosion came through a stopping on the left-hand side of the main tunnel? Yes.
2217. And you believe there was an accumulation of gas in these unworked bords? Yes.
2218. That being the case, would not that intensify the force and power of the explosion a very great deal? Yes.
2219. Then what would be the result of that intensification of the explosion—which way, for instance, might you then expect the increased force to expend itself? Out-bye—up the tunnel.
2220. Then how do you account for the five bodies being found here, where from every reasonable belief they should not have been, nor could have got, unless they came round by the face here? I think they were forced there by the explosion.

Mr. W. B. Green. 12 May, 1887.

2221. Coming down No. 1, if gas existed in these two bords it would receive an accession of strength by the firing of the gas, and blow the five boys through the stopping as being in the direct course? Yes.
2222. *President.*] I think what Mr. Croudace wants you to consider is this: Supposing your hypothesis to be correct, and gas existed in the two unworked bords in the district marked A, and supposing that gas was fired, the explosion would gather new strength, and, as you say, the force of that would go necessarily down the tunnel? Yes.
2223. Mr. Croudace, in this view, wants you to account for the five bodies and the horse, which were projected through this stopping by the first explosion, remaining at this point, provided there was a second explosion in proximity to the spot where the bodies were found? I think the boys were standing in front of the stopping, and the gas having exploded, gathered more strength, and forced the bodies there. Then you must remember the bodies would be lying down, and if there was more gas to explode, it would not have the same effect upon the bodies in that position as it would if they were erect.
2224. Did you notice the condition of these bodies—were they burnt? Yes, they were burnt.
2225. *Mr. Croudace.*] Were they much burnt? One, lying further up than the rest against the corner of a bord on some small I specially noticed; his hair was singed; the horse was also singed.
2226. Did you notice the props, or any bark, or other material, showing any large extent of fire having been present? I did not.
2227. If there had been any large extent of fire from an explosion, do you not think that the bodies, props, and suchlike would have been charred? I do.
2228. Well, I may tell you that at this point, close to the body of the horse at the bord end, I picked up a piece of bark not even charred—are there indications in this direction, No. 1 and No. 2, of much charring? I was not in there.
2229. You believe that where charring exists there has been fire? Certainly.
2230. Do you think that where no charring exists there is much probability of there having been fire? No.
2231. Just look at these workings, please. [*Draws attention to particular workings affected, as shown on the plan.*] Is not that a very small area of workings altogether? Yes.
2232. And would not a comparatively small quantity of gas, therefore, do a considerable amount of damage in that district? Yes.
2233. Am I right, therefore, in saying that a comparatively small quantity would do the damage you have seen here? I am of opinion that the gas was probably assisted by the coal-dust.
2234. As a matter of fact, do you think there was much gas in any of these workings? I cannot say there was much gas where a naked lamp would be, and I found a naked lamp in this stenton here (*indicating a point on the plan*).
2235. Do you know whether the men working in the bords on the right-hand side of No. 1 used safety or open lamps? I believe they used open lamps.
2236. Did you travel through the return airway here to the west? Yes.
2237. Did you find any signs of much damage in that direction? No.
2238. *President.*] You stated, Mr. Green, that you picked up a lamp in stenton No. 1—what kind of a lamp was it? A copper lamp.
2239. Was it a large lamp? Yes.
2240. Where Millwood was found, did you see a lamp by his side? No.
2241. It was stated to us yesterday that his lamp was lying by his side? I did not see it, and this is the first I have heard of it.
2242. You and Mr. McCabe were there first to see his body? Yes.
2243. And you did not see his lamp? No; but I saw a lamp in the stenton, and I came to the conclusion that it was the deputy's lamp.
2244. You did not know the deputy? No.
2245. *Mr. Croudace.*] How did you know it was his lamp? I knew it was a deputy's lamp.
2246. *Mr. Jones.*] Did you consider the Bulli mine a dusty one? Yes, very dusty.
2247. You have already stated that there should be double doors in the air passages where required? Yes; I think it would be much safer.
2248. Is that the practice in England? Yes; in gassy mines it is.
2249. You, as a practical man, would suggest that it should be followed in all mines where gas exists? Yes.
2250. *President.*] Would you go further and say that on main roads no doors should exist? I think it would be much better if it could be arranged to have no doors on main roads. [*The witness withdrew.*]

David Howie sworn and examined:—

Mr. D. Howie. 12 May, 1887.

2251. *President.*] You are a miner, employed at Mount Kembla? Yes.
2252. Did you work in the Bulli mine before the accident? I never did work at the Bulli mine.
2253. You did not know anything about the workings before the accident? No.
2254. When did you first arrive at the mine? On the evening of the day after the accident.
2255. Did you go as a rescuer? Yes.
2256. Tell us where you went? We proceeded into the tunnel for about 400 yards, turned to the right, and went through the airway till we got on to the main tunnel again, and proceeded for a few hundred yards further, when Mr. Evans and Mr. Jones tested the air; we then proceeded on a bit further till we came to the large fall; we got over the fall, and again tested the air; we proceeded on till we came to a heading, of which I do not know the number, but a little further on we came to a heading where there were some skips lying all jammed together; I, at Mr. Evans' direction, jumped over, and I saw a boy's hand underneath a skip; we lifted the skips off, and got the boy out; by that time, another party came in.
2257. Did you observe the condition of the boy—was he burnt? I thought the hand was drawn together, I did not take particular notice of the face.
2258. Where did you go after taking out the boy? We proceeded to carry the boy out, and when we came back again, some more bodies were being carried out from the straight-in heading, and other working places the other side of that.

Mr. D. Howie. 12 May, 1887.

2259. That was Nos. 3, 4, 5, and 6; were you engaged carrying the bodies out? Yes, from the mouth of the tunnel.
2260. Were you in the face of any of these headings? No.
2261. Did you see any charred props on the road? No, I did not take any notice.
2262. You confined your attention to the carrying out of the bodies? Yes.
2263. Then you can state nothing about the condition of the workings? No, I never went in further than that.
2264. How often were you in the Bulli mine that night? Four times.
2265. *Mr. Clarke.*] Who accompanied you on those occasions? My brother, William Howie, Tom Hopkins, and William Wotherspone, and others.
2266. *Mr. Croudace.*] How was it you happened to go all the way from Mount Kembla to assist in this work? We were asked to go.
2267. Who asked you? Mr. Evans.
2268. Was there not plenty of assistance without you? It seems not.
2269. Were there no resident men with you—no Bulli hands? There was only one in our party; there were six of us besides Mr. Evans and Mr. Jones.
2270. Were there no men from Coalcliffe or North Illawarra with you? There were none in our party.
2271. *Mr. Jones.*] Then you simply accompanied Mr. Evans' party? Yes. [*The witness withdrew.*]

William Wotherspone sworn and examined:—

Mr. W. Wotherspone. 12 May, 1887.

2272. *President.*] You are a miner, working at Mount Kembla Colliery? Yes.
2273. Did you accompany the last witness, David Howie, into the Bulli mine on the Thursday night after the accident? Yes.
2274. And you entered that mine along with Mr. Evans and party? Yes.
2275. Where did you proceed to? We proceeded up the Hill End, or gassy district.
2276. Had you been in that district before the accident? No.
2277. Having gone to the gassy district, what did you then do? The first thing David Hopkins and I did was to put up canvas bratticing in the straight heading; but before doing that we went up to where the horse was lying dead. We went in there to see if there were any bodies of the men.
2278. Did you see any gas there? No.
2279. Did you pass through the cut-through into No. 2? No, we took the same road, and went along the Flatt, into No. 3.
2280. Did you go to the face? Yes; that is where Newton was lying. The road was all fallen there.
2281. Were the bodies removed out of Nos. 3 and 4 at that time? No.
2282. How many bodies did you find? Two.
2283. Did you notice whether the men were burnt? Their hair seemed to be singed, but I could not say as to the bodies, because they were all black, being covered with dust.
2284. Then having gone to the face of No. 3 heading, did you go also to No. 4? Yes; that is where Bentley was lying; there were other four lying in that heading.
2285. Was a horse there? No; the horse was out on the main heading.
2286. Did you perceive the condition of the bodies in No. 4? Yes, as I have said, they were all black, as it were from dust.
2287. Then going down the main heading, did you and your party go into the face of No. 5? No; we did not go to the face, we came up through the canvas again.
2288. You would then go to the Flatt where the skips were lying? Yes.
2289. How were they lying? Most of them were lying about 6 inches off the rails, and tossed about.
2290. Did you notice any bodies lying under the skips? I saw a boy, and saw him taken out.
2291. Was he burnt? I cannot say; I did not examine him.
2292. Have you had any experience in gassy mines? Yes; I was in about as gassy a mine as any in the world.
2293. Where was that? Cadzow.
2294. *Mr. Neilson.*] Did you witness any explosions there? There was an explosion there, but no bodies burnt.
2295. Were you in No. 2 heading? Yes.
2296. Did you notice the effects of the explosion there? I cannot say much about the effects.
2297. Where men are injured in explosions, it is the hair that fires first, is it not? Yes.
2298. Were the bodies you saw at Bulli much burnt? Just singed only.
2299. Then they were not in that case burnt very much? No; they did not seem very much burnt, none of the skin had come off.
2300. If a man puts his head into fire, the hair on his face and head comes off first? Yes, I have seen that myself, where the hair and whiskers have come off and the man not much burnt in the face.
2301. Have you ever worked where there was fire-damp, and safety-lamps were used? Yes, in Cadzow.
2302. What was the system of firing shots there—who fired the shots? The deputy, or what we called the roads-man.
2303. What was the process? They used touch-paper generally.
2304. How did you light the touch-paper? Always with a match, because there was no danger of gas there, every place being bratticed up to the face.
2305. And you lit the touch-paper with a match? Yes.
2306. Was that in the main current? Yes, generally. There was always a good current if you went outside the bratticing.
2307. The men were never allowed to fire a shot, then? No, and a man always went around after we went out to see that all was right.
2308. What sort of tamping did you use? Damp tamping. Very small dry coal is not a safe thing to use.
2309. *Mr. Hilton.*] From what you have seen do you think it required a large amount of gas to cause the

Mr. W. Wotherspone. 12 May, 1887.

the destruction? Yes, and I do not think it was the gas in the headings that caused the explosion. I think the new furnace had a great deal to do with it.
2310. In what way? Well, I think there has been a good deal of gas lying in Bulli for some time, and the new furnace has caused it to come out.
2311. *Mr. Owens.*] Did you test for gas when you were in the mine? Mr. Evans did in my presence, in the headings.
2312. Did he find any? No.
2313. Do you know anything about the working of Bulli mine? No, nothing previous to the explosion.
2314. *Mr. Croudace.*] From your experience in gassy mines, would you think of tilting a lamp to light the touch? No, I think it is a very bad practice.
2315. Any man doing so, you think, would be doing a wrong both to himself and his fellow men, and to the community at large? Yes.
2316. That being your opinion, what would you think of a man, or two, or three men who worked in a mine with the top of a lamp burnt into a large hole, and continued so to work for two or three days? I should think it was a very foolish action.
2317. Then, Mr. Wotherspone, would you look at this plan [*pointing to a section of the workings*]; knowing that there is a small area of coal in this gassy district, would it take a large or a small amount of gas to do a considerable amount of damage? It would not take a great amount of gas to do a great deal of damage.
2318. In any gassy district comprising a limited area, you are of opinion that a comparatively small quantity of gas would do a considerable amount of damage? Yes.
2319. In going through the workings of Bulli mine, did you notice any stoppings composed of stone and loose earth blown out? Yes.
2320. Coming down into the main tunnel did you observe a stopping, the first on the left of No. 2 heading? Yes. That was the first put in with canvas.
2321. Did you notice any below that blown out? Yes.
2322. Did you consider that there was a great deal of damage done? Not a great deal of damage inside the workings.
2323. Coming to the Flatts where you saw the tubs displaced, you saw one or two broken tubs? Yes; we removed them to get the bodies away.
2324. Have you ever seen the effects of a really heavy explosion? Never; I have only been where they were slight.
2325. I asked you that question because I wanted you to compare this with a really heavy explosion.
2326. *Mr. Jones.*] You have stated that you believed that the new furnace had something to do with the explosion—what are your reasons? Well, I have worked in a pit where we had a lot of gas lying, "dampit," and I believe it was in Bulli the same; and if it had been allowed to come out, it would have caused the pit to be blown out, but we kept it down so that it would not fire.
2327. Where would you expect to find light carburetted hydrogen? In the old workings.
2328. And is that where you would find black-damp? Yes.
2329. What effect would hydrogen have upon the furnace? It would burn on the furnace.
2330. Did you ever hear of any displacement having taken place at the furnace? No.
2331. Then what becomes of your belief that there was a large quantity of gas stored up in the return—would not the effect of the air be to diffuse it and render it harmless? Yes, if there was plenty of it.
2332. Yes, and plenty of black-damp would have a similar effect? Yes.
2333. Then these two elements would prevent a realization of your belief? Yes; but a slight current of air would cause the effect.
2334. But not having seen any manifestation of force at the furnace, there is no evidence to support your belief? I never knew of an explosion going to the furnace.
2335. *Mr. Neilson.*] Do you know how long the new furnace has been working? About six months, I see by the papers.
2336. With three times the quantity of air than there was before, would not six months be time long enough to draw out any quantity of gas that might be there? It would depend upon the working of the furnace.
2337. *Mr. Owens.*] You said in answer to Mr. Croudace that in a mine where gas exists the fact of a lamp with a top burning off would be highly dangerous? Yes.
2338. Supposing that you were supplied with such a lamp, say in the Hill End district, and could not get another, what would you do? I would go out. [*The witness withdrew.*]

Mr. G. O'MALLEY CLARKE in the Chair.

David Hopkins sworn and examined:—

Mr. D. Hopkins. 12 May, 1887.

2339. *Chairman.*] You are a miner, working at Mount Kembla? Yes.
2340. Did you visit the Bulli mine after the accident? Yes; on Thursday, the 24th, at 10 o'clock at night.
2341. Did you visit the mine? Yes.
2342. In company with whom? Mr. Evans, David and William Howie, and William Wotherspone.
2343. In what direction did you proceed, and what did you do? We went into the gassy section, as far as No. 3 heading. I saw a man lying there; we turned the air into No. 3 and carried the man out.
2344. Did you go to Nos. 1 and 2? No.
2345. Did you notice much damage done? Yes.
2346. Did you go back the same road? Yes. I was only in once. I did not go into the western. All I did was to assist in putting the brattice up and carrying the bodies out.
2347. Did you form any opinion as to the cause of the accident—the origin of it? No.
2348. *Mr. Hilton.*] Have you had much experience as a miner? Yes; I have been at it since I was 12 years of age.

Mr. D. Hopkins. 12 May, 1887.

2349. Have you worked in mines that gave off gas? Yes.
2350. What sort of lights did you use? Davy-lamps.
2351. Were you ever in a mine that exploded? I was never inside during an explosion. I have been in after an explosion before this occurrence.
2352. From your experience, do you think it would require a large amount of gas to cause the destruction you saw in Bulli mine? There must be a large amount of gas to do much damage.
2353. Is there a great amount of damage done at Bulli? It depends upon the kind of roof. If the roof were bad, the same as it has been in some places where I have worked, there would be much more damage I should say.
2354. *Mr. Owens.*] You never worked in Bulli Colliery? No. [*The witness withdrew.*]

Isaac Nixon sworn and examined :—

Mr. I. Nixon. 12 May, 1887.

2355. *Chairman.*] Are you a miner? Yes, working at Mount Kembla.
2356. Did you visit the Bulli mine after the accident? Yes, on Thursday, the 24th of April.
2357. At what time? I think it would be about 10 o'clock at night.
2358. Who did you go in with? I went in with John Chalmers.
2359. Had you any knowledge of the mine? No; it was my first visit.
2360. Where did you go? I went into No. 3 heading.
2361. Was Hopkins with you? Yes; there were seven of us altogether.
2362. What did you do? I helped to carry some of the dead bodies out.
2363. Where from? No. 3 heading.
2364. Did you examine the heading? No.
2365. Did you only pay one visit to the mine? No; I helped to fetch three bodies out of No. 3 heading.
2366. Did you leave the mine soon after? I left the mine about 5 o'clock on the Friday morning.
2367. And all the time you were assisting to carry out the bodies from the main drive? Yes.
2368. Did you take notice of any of the damage done? All the notice I took was that the skips were knocked about down in the bottom end of the main.
2369. How many bodies did you find altogether there? I saw about four or five.
2370. Was there any appearance of burning on them? Well, yes; there was a little appearance of burning on them.
2371. You did not go into No. 2? No.
2372. Or any other part of the mine? No; I only went to No. 3.
2373. Can you give any opinion as to the cause of the accident; this wreckage, or anything of that sort? No.
2374. *Mr. Neilson.*] Was the hair burnt on these bodies? The hair was slightly singed on the head—singed close to the skull.
2375. Did you go into the western district of the Hill End district on the left-hand side? No.
2376. Did you try for gas anywhere while you were in? No; I was simply engaged in getting the bodies out.
2377. Did you see anyone else try for gas? No.
2378. *Mr. Jones.*] Did you see any other bodies than the three you helped to carry out? Yes; I saw four or five of them.
2379. Did you notice any signs of burning on them? No; I only noticed those I helped to carry out.
2380. *Mr. Croudace.*] Did Mr. Evans ask you to go to the Bulli mine? Yes.
2381. Did he state any reason? No; he wanted us to go to try and get the bodies out.
2382. Have you had much experience in fiery mines? Yes.
2383. But you did not see much in this mine? No; I did not pay any attention. [*The witness withdrew.*]

John Halloran sworn and examined :—

Mr. J. Halloran. 12 May, 1887.

2384. *Chairman.*] What is your occupation, Mr. Halloran? I am overman at Mount Kembla, in charge of the night shift.
2385. Had you any knowledge of the Bulli mine prior to the accident? I never worked at Bulli.
2386. When did you visit the mine after the explosion? On the Thursday night, and entered the mine about 11 o'clock.
2387. As a rescuer, I suppose? Yes.
2388. Where did you go to? We went to the face of the main heading, no further.
2389. What do you see? I saw two dead bodies.
2390. Did you go into any adjoining heading and make any observation of things? I was in No. 2 and No. 3, I think; but I would not be sure as to the numbers.

[Note.—The headings were indicated on the plan, and witness recognises those he entered.]

2391. Did you observe any bodies? Yes; we took some bodies from that direction—one from these two headings, and on the return, not far from the face of the return, we got two bodies.
2392. Did you go into these headings marked Nos. 1 and 2? No.
2393. Did you go anywhere else? No.
2394. Can you describe the condition of the mine—was there much damage done? There was not much damage done up there, there was some going in.
2395. Are you in a position to give an opinion as to the cause of the disaster, or its effects? Well, no I do not know that I am. I went there more as a rescuer than anything else. [*The witness withdrew.*]

Archibald Gardiner sworn and examined :— Mr. A. Gardiner, 12 May, 1887.

2396. *President.*] You are a mining engineer? Yes; and a certificated colliery manager.
2397. Residing at Newcastle? Yes.
2398. You produced this plan of the Bulli Colliery? Yes.
2399. It is an accurate plan of the workings of the colliery which have been affected by the explosion? Yes.
2400. Where did you get the information which enabled you to mark the places representing where the different bodies were found, as well as to make other indications on the plan? This blue tracing here was handed to me by Mr. Ross.
2401. Were you present at the mine when any of the bodies were found? I was present when some men were brought out of the western.
2402. So you speak from your own knowledge of the positions of the men found in the western? Yes, of nearly all of them; but I did not see those found to the right-hand of western.
2403. When did you visit the Bulli Colliery first? The second day after the explosion.
2404. That was Thursday or Friday? That was Friday morning.
2405. When did you first go into the mine? On Friday morning at 10 o'clock.
2406. Who took you into the mine? I accompanied the Examiner of Coal-fields, Messrs. Ross, Evans, Neilson, and Inspector Rowan.
2407. With what object? To find out the causes of the explosion.
2408. Where did you go? We proceeded over the western district.
2409. How did you enter the mine? By the grip road.
2410. You did not proceed through the main tunnel? Not through the main tunnel at the beginning.
2411. When did you go through the main tunnel? On the Friday, the first time I went through the Hill End district.
2412. In going through the main tunnel, what conclusions did you form as to the cause of that large fall? The cause of it had been the blast of the explosion; the timber that has been torn away has been loaded with loose stuff, and it came down, and might appear at first sight as if it had been drawn from the roof, whereas it was only stuff used for loading the sets; the wire ropes running along the timber on pulley-wheels would greatly assist in pulling down the timber; but the primary cause of the destruction was the force of the explosion.
2413. Is it your opinion that the roof had previously started from the conglomerate, and was resting on the timber? Yes, and thereby loaded the sets; I have satisfied myself that that has been the case; and it is very easy to see proof of that.
2414. Did you take particular notice of the condition of the main road? Yes, in many places.
2415. Are you decided in the opinion that the large fall in the main tunnel is due to ordinary causes? Yes; I am satisfied it was due to the force of the explosion which knocked out some of the props, and the wire ropes and the stuff lying on the top of the timber have assisted in wrecking it for such a length.
2416. There was no evidence that it was caused by gunpowder or dynamite? No; so far as I could see there were no symptoms of anything of the kind.
2417. In passing along how did you make your examination—did you make particular inspection of the tunnel as you went along? About 10 o'clock on the night of the 30th March, in company with Messrs. Evans and Crawford, I went into the mine, and we minutely examined from the mouth of the tunnel to the commencement of the large fall; then we returned by the way of the grip and came down here for about a chain from the junction of the travelling road back towards the mouth of the tunnel, and then minutely examined the props, falls, and everything that could be seen from that point right to the face of No. 1 heading.
2418. Give us the results as you went along? About 120 yards in we got some coped dust, which was sticking to one of the props.
2419. It was attached to the props? Yes; we took samples of this dust; also some splinters off the props.
2420. Were they burnt? No, not the bark splinters; these things I produced at the Coroner's inquest; we also examined the overcast to the old furnace, to see if there were any effects of the explosion there, and to examine whatever had taken place; the explosion was not traceable there, and there was no disturbance in the old air-course; the top of the overcast was spiked down with 6-inch spikes; three of these were lifted up as if from below, but were not removed out of their places; the air-course was in itself intact, and did not seem to be under the influence of any explosion; the force where we saw indications of it appeared to come from down below; we then proceeded and examined further on. There was nothing particular at the junction of the travelling road with the main tunnel.
2421. Start at the junction of the travelling road and the main tunnel, and describe the result of your examination? We proceeded and examined all the timber at the road sides, and there was nothing remarkable up to the junction.
2422. What was the condition of the stoppings there? They were somewhat disturbed; but the force of the explosion had not affected them very much.
2423. Were they disturbed at all? I could not really say if they were disturbed; but if so, it was very little between these two points.
2424. Now coming to the top of the incline bank? At the junction there, where Melville and other five bodies were found, we took samples of bark and splinters from timber against which Melville's body was found lying, and as far as we could see no signs of fire were there at all; a fall had taken place, and I examined very minutely that place last night to ascertain whether I could see anything particular about that wreckage; that fall had evidently been caused by the concussion.
2425. How do you account for the bodies that were got at the top of the flat being burnt if you saw no signs of fire on the props, or did you examine any of the props with bark on them? Yes.
2426. Is bark sensitive to fire? Yes, very sensitive; particularly the bark I took from there; it was as fine as the hair of my head.
2427. If fire existed there, would you have seen it on the bark? Yes.
2428. And you saw no signs of flame? No.
2429. You are positive of that? Positive.
2430. How would you account for the bodies exhibiting signs of burning? The heated dust will account for it.

Mr. A. Gardiner. 12 May, 1887.

2431. You took samples of dust from the props? Yes.
2432. Was it coke, or dust, or what? There was a good deal of coke amongst it; but it was not all charred, the dust was only partially consumed.
2433. It was adhering to the props? Yes; at one place it was a quarter of an inch thick on a tree standing in the centre of the junction facing the western and Hill End road; I took particular notice of it; found it to be a quarter of an inch thick.
2434. What side was it? The dust was in the in-bye side, as if it came outwards.
2435. After leaving the junction of the western, where did you go? Straight into the Hill End district.
2436. You passed over a large fall? Yes, and then went through several bords.
2437. Was that through the fault? I believe it was over some fault or other. There was a large fall there. From information given to me I was anxious to go into the western district to see the timber there, to ascertain if there were any signs of fire.
2438. Proceeding onward, where did your examination extend, and how was the ventilation at this time? We found the roads and places pretty clear until we got to No. 1 heading.
2439. Two bodies were found before you got there? Yes; 96 yards from the centre of No. 1 heading.
2440. You did not see them? No.
2441. Did you examine the props where the bodies were found? Just near there are no props at all.
2442. Did you examine the nearest? Yes; but there were no traces of fire along there.
2443. You found no traces of fire until you came where? Down in No. 1 heading, and in No. 1 bord off No. 1 heading, were the first traces of fire that I saw.
2444. In making this plan, you put down everything as it exists? Yes; I observed in travelling up No. 1 heading that the first bord off that heading was a disused bord. It is marked on the plan, "Bord stowed up." It was filled up with debris.
2445. And there was access? No, I tried, but could not get in.
2446. Could that act as a reservoir or magazine for gas? No.
2447. The next bord is also a disused bord, marked "Standing burnt coal"? Yes; the face of the coal is burnt.
2448. Did you get into the face? Yes; there was no gas there.
2449. Then you pass over the roll to the bords working coal between rolls? Yes.
2450. Were the spaces a little greater? Yes.
2451. You were not present when any bodies were found in Nos. 1 and 2 headings? No, not when they were found, but after they were taken out. I was there when the man, Olsen, the last man brought out of the pit, was taken out. He was found in the fifth working bord, and he was taken out on the Saturday, having been missed by one of the parties.
2452. That was the only body that you saw? Yes, in that district.
2453. Did you closely examine the body when you saw it? Yes.
2454. There were no marks of burning on it? Well, I could not really say. It was covered with coal dust, and I did not go out with it, and I would not like to pass an opinion unless I saw the body in daylight, after it had been washed.
2455. Passing upwards you come to the last stenton, where there is a danger-board standing almost level with the stenton? Yes; in the centre of the stenton, in No. 1 heading, the danger-board and props are still standing.
2456. And about there was a horse? Yes.
2457. Have you been in the face of that heading? Yes, several times.
2458. Did you find any fire-damp? Yes, every time; and I have seen from 4 to 14 yards of gas.
2459. How thick? It was 6 inches on the out-bye side, and I have seen as little as 4 yards in length.
2460. Was it very pure? Very quick.
2461. Was it remarkable for its quickness? It was.
2462. Was it silver gas, or do you know anything about that? That is what we had in the Forsyth district in Scotland.
2463. *Mr. Croudace.*] Do you know the component parts of silver gas? No, not minutely, but I believe there is something in it that gives it a quicker smell.
2464. *President.*] With reference to this bord, No. 1, was it 80 feet 6 inches in advance of the stenton? Yes.
2465. Can you vouch for the accuracy of the measurement? I can.
2466. At a spot within 6 or 7 yards from the face of No. 1 I see some compressed powder and a coil of fuse was got here unburnt—that is indicated on the plan? Yes.
2467. By whose authority? My own.
2468. Did you see it? Yes.
2469. Where was the powder found? On a canch or bench on the side of the coal, about 6 yards from the face of the heading, and about 3 or 4 feet from the floor, and the coil of fuse was found beside it. I brought out the fuse, and Mr. Dixon, the Government Inspector, brought out the powder.
2470. It was quite unburnt? Yes; and I believe it was produced by Mr. Dixon at the inquest.
2471. Passing through the stenton, you come to the face of No. 2, standing 85 feet in advance of the stenton, that is 28 yards 1 foot? Yes.
2472. That heading is on a roll? Yes. I have omitted to say that last night, when down in the heading, Mr. White had some men put on to put bratticing in the face of No. 2 heading, and while they were working there removing small coal from the front of a canch, and after they had removed the skip which was there, a naked lamp was found on the floor.
2473. Did you see it? Yes.
2474. What sort of lamp was it? An ordinary miner's naked lamp.
2475. Did you notice whether there was any oil or wick in it? Yes, I noticed that the wick was in it.
2476. Could you tell that it had been in recent use? Not very easily. It had been among the coal-dust, and it was not observed until they were putting the bratticing down to the bottom, where it was discovered.
2477. Had it been trampled on? No; it was close to the left-hand side of the heading, and I believe that search parties going in on occasions went to the right-hand side of the skips. We went on both sides of the skips on going in and out of that heading.
2478. You saw the lamp? I saw it.

Mr. A. Gardiner. 12 May, 1887.

2479. Did it have every appearance of having been recently used? It might have been used, but I could not say; I suppose it was.
2480. Did you suppose that it was a suspicious circumstance? Very suspicious.
2481. Did you see any bodies removed from No. 2 heading? No.
2482. Did you see any removed from Nos. 3 and 4 headings? None.
2483. Can you describe to me the course of the ventilating current from Nos. 3 and 4 headings? Yes. The main intake of the Hill End district passes the main engine road to No. 1 heading; it then passes through the stenton to No. 2 heading, and then it passes down, supplying the bords down No. 2 heading, until it comes to the bord next to the engine road, subsequently it passes through out into the main engine road, again it then passes along to No. 3 heading, and is again separated there by a door; it passes up No. 3 to the in-bye stenton, through this stenton to No. 4, then down No. 4 on the main road, ventilating one bord here, also goes down to the straight and passes into its No. 5. It then enters the return air-course, which is parallel with the engine road, back to the entrance of No. 2 heading, passes up the heading road for about 2 chains, and passes by the return air-course through the dyke again.
2484. Did you get into these workings by the return air-course, near the dyke? I did.
2485. Right to the head of these workings? Yes.
2486. Did they contain any gas? None at all.
2487. In this circle of workings, marked on the plan A, did you see any evidence of a separate explosion? Nothing at all attracted my attention, although I examined the places all over it, and this stopping, marked on the plan "stopping good," I found not at all injured; the other stopping is marked partly out. Some debris was lying down for about 15 inches, and that is the reason I so marked it, although a part of the stopping is good the damage extends only 3 or 4 feet, but on the other side of that the stopping is just as good as if it had been recently built up, and all these bords in the section of the plan marked A show no evidence of fire or explosion.
2488. I see there are two bords going down the right of the working marked A, where you have marked "fall." Could you get over that fall? I went forward and looked over it, but I did not go over it.
2489. Did you see any evidence of gas on the top of this fall which stopped up these two bords? No.
2490. In your opinion were these two bords likely to contain a reservoir of gas? No.
2491. Did you see any evidence of a separate reservoir of gas having been fired there? Had there been a reservoir of gas fired there these stoppings must have been blown out.
2492. You pass through into the return? Yes.
2493. Is the return of adequate capacity? Yes.
2494. You then passed towards the western district? Yes.
2495. You get into it by a door? Yes.
2496. Which I see you have marked "slightly damaged but still hanging"? Yes.
2497. Before coming to that door there is a road which leads to the left? Yes; that is the return air-course.
2498. Reaching the western tunnel where did you go first on the Friday? On my first visit I came to the large fall towards the junction in an air-course.
2499. Did you observe the air-course broken down? Yes.
2500. In what way were the planks displaced, had the force come from below or above? The force came from above.
2501. Did I understand you to say that you saw these bodies lying on the western road? No, not these, they were lying under the overcast.
2502. You passed in towards the face of the western district, what was the condition of the face? There was not much wreckage at all in the whole of the western district.
2503. You passed through the door? The frame of the door was lying at an incline of 20 degrees inward, evidently showing that the force of the blast had gone in one direction, but that the recoil of it had taken the frame of the door in another, and the recoil had had the effect of bringing the door back to its position, although the frame was carried slightly inwards.
2504. After an explosion is there generally a recoil of the force? In all cases.
2505. You found a man as indicated here by a blue cross? Yes.
2506. And you found no gas in the face of these workings? None whatever.
2507. Was the ventilating current much deranged? It was. I observe the slacky road to the right of the western road, where six bodies have been got, the remark "in good order; canister with powder and fuse got here."
2508. Did you see that? Yes; I got it in searching for a man; it had been overlooked till the Monday morning, when I brought it out.
2509. Where is it? It is in the lamp room of the Bulli mine. There are 3 or 4 lb. powder in the canister, and it is in good order.
2510. Was the fuse burnt? No; I saw no symptoms of burning in all the western district, and no evidence of fire at all.
2511. In passing round this road and in the bords of the Hill End district at various times did you see any traces of fire in Nos. 1 and 2 headings? The traces of fire were in Nos. 1 and 2, and it was right up to the danger-board in No. 1 heading, opposite the in-bye stenton.
2512. The last stenton towards the face? Yes.
2513. Did you see any signs of fire in the bords? Yes; in the bords off the heading for a short distance there were signs of fire, but there were no signs in the faces of these bords.
2514. Did you see any trace of the existence of gas in the bords off the heading? None at all.
2515. Not in any of your examinations? I never found gas anywhere else; in all my visits it was confined to Nos. 1 and 2 headings.
2516. In your opinion do these headings give off gas? Yes.
2517. And that is where the gas of this explosion came from? Yes.
2518. Do you think that the rolls had any influence in the amount of gas given off? They always have.
2519. Do you think that the practice followed in this colliery of driving these headings was a judicious one in the face of the fact that gas was being given off in the leading headings: I mean in respect to ventilation, can you suggest anything that would have improved the ventilation and carry away the gas? I think they should have had canvas up in these headings.
2520. In view of gas being given off you would have recommended bratticing? Yes.
2521. The ventilating current is directed into Nos. 1 and 2 from Nos. 3 and 4 by a door being placed on

Mr. A. Gardiner. 12 May, 1887.

the main heading. In the event of trains of skips passing through, the door would have to be open, would the ventilation be partially impaired for that time? Yes.
2522. In gassy districts of the mine would you consider it an evidence of good mining and management to have doors on a main road? No; it is advisable to dispense with doors as much as possible on main roads.
2523. Would it have been quite safe to have conducted the workings of this mine with the existing arrangements if bratticing had been used in the faces of the headings which gave off gas? Yes; quite.
2524. Of your own knowledge do you know the manner in which this mine was worked with safety-lamps? Of my own knowledge I do not.
2525. You made examinations with other gentlemen on a subsequent occasion for the purpose of ascertaining the circumstances and causes of the accident? I did.
2526. To what conclusion did you come? I came to the conclusion that the cause of the explosion was the firing of a shot in No. 2 heading.
2527. In the face? Yes; and I have every reason to believe that that shot was overcharged.
2528. In the event of shots being tamped with dry coal-dust, would that constitute a danger in itself? A very great danger.
2529. Would fire be shot out? Yes; a considerable distance.
2530. Do you know anything of the behaviour of fine coal-dust in the presence of gas, such as you saw in No 2 heading? Yes; it would be highly explosive, and it would have the effect of greatly aggravating the little fire-damp that may have been there if the fine dust suspended in the air ignited.
2531. Have you any doubt at all as to the situation of this explosion or of the causes? Not the slightest hesitation.
2532. Would the finding of the naked lamp last night in No. 2 heading cause you to alter your opinion? No; it has not altered it in any way; it only shows the carelessness of the men inside a heading; the finding of the lamp does not alter my opinion, which is that the shot fired in the heading lit the gas.
2533. Can you describe to us the course of the explosion so far as you have been able to ascertain? The gas ignited in No. 2 heading, the blast passed out of the heading, a part of it going through the stenton and passed down No. 1, and the flame extended into the bords as it passed along; the strongest portion of the force expended itself in and about No. 2 heading.
2534. Did you trace the course down No. 2 heading? I did.
2535. How did it go? In my opinion the main force of the blast went right down No. 2; in going down No. 2 it passed into the third bord above the tunnel and through the cut-through into the second bord; then through another cut-through into the first bord, and from the bord into No. 2 and downwards to the tunnel; it passed through the stopping marked "stopping out" on to No. 1 heading.
2536. *Mr. Neilson.*] It passed through the second bord, did it? No; it passed into No. 3 bord off No. 2 heading.
2537. *President.*] A portion of the blast passed through this stopping; then where did it go? Into the main engine road.
2538. What was the damage done on the diagonal road? The greatest force of the explosion after coming from Nos. 1 and 2 headings is exhibited on that flat to the head of No. 1; from the first cut-through on the left-hand side a horse and four boys had evidently been blown; they were found blown into the return away to the section marked by the letter A.
2539. Then a portion of the force passed into the tunnel? These stoppings Nos. 2, 3, 4, and 5 to the left of the main flat are all blown outwards; the door between 3 and 4 was carried away by the force of the blast; the force must have recoiled into the faces of Nos. 3 and 4 headings; there was a small fall in No. 3 opposite the first stenton, and there were some skips turned upside down; the force passed through into No. 4, and there another skip was upset, and in a bord off No. 4 a horse was lying about half-way to the face from the heading road; it then simply passed into the return.
2540. Did you notice two trains of skips, one empty and another loaded, along the flat between Nos. 2 and 3? Yes; the empties were telescoped into each other, the first two or three of the full skips were off the rails, but all the others were on; the empties were very much huddled together, but the full ones were not much damaged.
2541. The blast having arrived at the main tunnel you say it passed out? Yes.
2542. Did any portion of the force separate itself and go into the western? Yes; it separated itself here [*showing place on plan*], and the remaining portion passed through into the western and afterwards into the return.
2543. Would the large fall that occurred in the main tunnel road have had anything to do with it? It would have intensified and increased the shot.
2544. Can you explain how it was possible for the bodies found on the incline bank to be burnt? They may have been burnt by heated-dust, not by actual flame.
2545. Had the actual flame existed, would you have seen evidences of it on the props? Yes, I would; at a point 15 yards on the in-bye side of No. 2 heading I picked up two lines, and I found them still intact.
2546. Were they plumb-bob strings? Yes.
2547. Was that evidence that the destruction which was done to the stoppings and trains of skips was due to the force of the explosion without flame? Yes; force without flame.
2548. Have you ever heard of an explosion of gas in one position transmitting flame so that it exploded another reservoir at a distance, no gas intervening? Well, that depends on the distance one from the other.
2549. Could it be done on the supposition that the intervening distance was laden with dust? Oh, yes.
2550. Is there any limit to the length of flame that might be transmitted in a dust-laden atmosphere by an explosion of gas? The flame might extend for hundreds of yards.
2551. Would you consider Bulli a dusty mine? It is not a particularly dusty mine, but it is dusty.
2552. Is it a particularly dry mine? I never saw any water.
2553. Has the force of this explosion been confined to a comparatively small area of workings? Yes; to a very small area.
2554. Would that have any significance, in your opinion, with the great destruction of life which has occurred; and, notwithstanding this great destruction of life, are you still of opinion that not much gas exploded? There was not an explosion of much gas.

Mr. A. Gardiner.

12 May, 1887.

2555. Can you account for such a destruction of human life from the explosion of a comparatively small quantity of gas? It surprises me that such a small quantity of gas should cause the loss of so many lives.
2556. Is it explained by the fact that the area of workings is limited? It is largely explained by that fact, and the assistance the explosion derived from coal-dust.
2557. As a mining engineer and manager would you consider it an evidence of good mining to work bords and headings off the intake and off the return at the same time? Not in fiery mines.
2558. For what reason? In the mining of fast headings giving off gas it would be desirable to return the foul air directly to the return, and not into any working bords.
2559. *Mr. Neilson.*] If there had been a large extent of workings on each side of Nos. 1 and 2 when the explosion took place, would that have been the means of intensifying or reducing the extent of the explosion? It would be the means of reducing it.
2560. In what way? Simply because the force would be expended sooner.
2561. It would come out with great force and quickness when confined in the heading? Like a ball out of a cannon.
2562. When the force of the explosion struck against the side of the main tunnel it spread itself in the two directions as you have indicated? Yes; had the workings been more expansive the force would have been dissipated in the larger area, and less damage would have been done.
2563. Within the circle marked B, do you know the first two bords off No. 2 heading which are not working? I do.
2564. Do you think that there is any possibility of any gas having accumulated in there? No.
2565. A witness has given the opinion that there was an accumulation of gas in these two disused bords? Such could not be the case, for this reason: had gas been in there, and exploded from the flame of the original explosion, one of its effects would be to knock out the stoppings in a different direction; whereas these stoppings connecting Nos. 1 and 2 headings are both in good order at the present moment.
2566. *President.*] You say the force would have come out of No. 2 heading as if out of a cannon? Just so.
2567. *Mr. Nielson.*] You say that no gas could accumulate on account of the way the bords were stowed? Yes.
2568. And the stoppings near these disused bords would have been blown out? Yes.
2569. Instead of which they are in good order? Yes.
2570. Now, there are two boards in the A circle of workings marked "fall;" do you think there is any probability of gas accumulating in these two disused bords? No; the same reason I gave in reference to the portion marked B holds good with these; the stoppings almost opposite the bords referred to are in good order, and the other near it is only slightly damaged.
2571. What would have become of these stoppings if gas had existed in the bords? They would have been blown out completely.
2572. You have examined these surrounding bords; how far away from the heading were they charred? Not very far; in some cases not above 15 or 20 yards, and in others a little further; but none of the props of the bords off the headings were charred in the faces.
2573. The inference of that is the fire went directly out? Yes; licking into the mouths of the boards as it passed.
2574. Were the timbers outside mostly charred? Yes, those directly in the course of explosion; those in the in-bye side seem to have come in contact with the flame about a foot from the roof.
2575. The man, Olsen, was found in the face of the fifth bord off No. 1 heading; was his hair burnt? I really could not say.
2576. Assuming that in these old workings between the Hill End section and the western on the western side of the dyke there was an accumulation of gas standing; is it possible that the increased force of the furnace occasioned it? There is a theory now given that the furnace has drawn that gas out; is it possible, do you think, for the increased power of the furnace to have done that? There was not a great force shown there; no gas could have existed there, for the skips near the door of the western were not greatly disturbed; I believe there was only one found off the rails; if there had been a second explosion, the effect of it would have undoubtedly been shown in the air-course, and no indications existed, for there is a good passage through there.
2577. Have you formed any idea where the force of the explosion terminated in the western? I think very little of the force went down to the faces of the western workings, and that it died very quickly as it went down.
2578. What killed the men? After-damp, or gases generated by the explosion.
2579. Have you any idea as to what way the men have been requested to fire shots in these places? No.
2580. In reference to these heading faces being bratticed, what is the usual way of bringing air into these workings, and do you think there was any danger in working the bords off the headings with naked lights? There was plenty of air there to render it safe, provided there was no great quantity of gas being given off.
2581. Supposing these places were bratticed, and the gas diluted as it was given off, would there be any danger to work outside with naked lights? No.
2582. *Mr. Hilton.*] Have you measured the distance of these bords from the headings? Yes; from an actual survey.
2583. Would you give us the measurements? I have marked them all on the plan; if you will point out any one you refer to I will give you the distance.
2584. What is the distance of No. 3 heading face from the last stenton? 120 feet.
2585. What is the distance of No. 4 heading face from the last stenton? 70 feet.
2586. Will you point out to me the return airway from the western workings to the furnace? [*Airway pointed out on the colliery plan.*]
2587. Did you travel it? No.
2588. Why not? I had no instructions to do so.
2589. I suppose that you will be well aware that the return airway from the western workings to the furnace and from the Hill End district ought to constitute a part of the plan in connection with this disaster? It is not for me to say what should constitute the plan; I was instructed by the President of the Commission to prepare the plan.
2590. You have been asked your opinion on certain matters, and I wish to get your opinion on this; I now ask you again, do you think that the return airway from the western working to the furnace and from

Mr. A. Gardiner. 12 May, 1887.

from the Hill End district to the furnace should not constitute a portion of the plan in connection with the disaster? No.
2591. Why? Because there was no damage done there, and the blast was not fired at the furnace.
2592. Have you travelled the return airway from the western workings to the furnace? No; I have not.
2593. Have you travelled the return airway from the Hill End district to the furnace? No.
2594. Do you think you can travel it? Yes.
2595. Are you sure the airway is open? Yes.
2596. Are you positively sure? Yes.
2597. How long has it been open? All the time I have been visiting the colliery it has been open.
2598. Are you positively sure? Positively sure.
2599. How long ago is it since you first visited the mine? On the 25th of March, the second day after the explosion.
2600. And you say that the western return airway, right from the workings to the furnace, and the Hill End return airway to the furnace, have been in a state to be travelled since the second day after the explosion? I did not say that; I say that the airways are open.
2601. I asked whether it was open so that a person could travel through it, and I understood you to say that it was? I did not say that.
2602. Do you know whether the western return airway can be travelled? Of my own knowledge I cannot say that it can be travelled.
2603. You said to me a short time ago that it could be travelled? Yes; and I believe I could travel it.
2604. But that is simply a matter of opinion? No; I know it is open, because I measured 84,000 cubic feet of air per minute coming across it.
2605. Is it open so that you can travel it? I believe I could, but I never attempted it.
2606. Do you think it is a proper travelling way in the ordinary sense of the term? Not having travelled it I could not say.
2607. *Mr. Owens.*] Did I understand you to say that the men found on the incline top were singed, and that you could not account for the bodies being singed? I do not say that they were singed.
2608. Or did you say that the only way you could account for it was by the heated coal-dust; if it was hot enough to singe the hair would it not be hot enough to singe the bark on the props? I did not use the word "singe," but you might have heated air of sufficient temperature to cause singeing, for instance, you do not put flame into a baker's oven for the purpose of baking bread, nevertheless you can roast things in it.
2609. If the heated air was sufficient to singe the bodies, would it not show on the bark? I did not notice the bodies, and I cannot say they were burnt; they were taken out before I got there; there were no signs of burning on the props.
2610. Would not the heated air have a burning effect on this fine bark? It has not had any effect, for I have given proof of it by production of the bark.
2611. You are not sure whether the bodies found there were burnt or not? I did not see them; I do not know of my own knowledge that they were burnt.
2612. Where did you find the lamp? In No. 2 heading.
2613. Did you come to the conclusion that it was used in the heading? I think it is very suspicious, and that it was probably used in the heading.
2614. Don't you think that it could have been blown there? No.
2615. Why? There were no naked lamps used about there.
2616. You have heard of the practice of hanging lamps on the danger-board, don't you think it could have been carried in the heading by the recoil of the explosion? We got one of the lamps on the danger-board, and in No. 2 heading the danger-board prop had been blown down, and several lamps have been picked up there.
2617. Perhaps the wheeler had a spare lamp? Quite possible.
2618. And it might have been blown in, is that not possible? Possible, but not likely.
2619. *President.*] How many yards distant was the lamp from the danger-board? About 26 yards.
2620. *Mr. Jones.*] In making your survey what was the distance of the longest bord in No. 2 heading from the cut-through? 126 feet or 42 yards.
2621. Was that distance a violation of the Coal Mines Act? Yes.
2622. You said that in examining the timber in the bords off Nos. 1 and 2 headings you found little or no evidence of charring on the props? I said that the charring did not extend to the working faces.
2623. Was that owing to the distance of the cut-throughs? Well, I don't think it was.
2624. Did you not observe that the blast generally went as far as the cut-through from bord to bord? No; in the bords off No. 1 it did not go as far as the cut-throughs.
2625. Was there a cut-through in the first bord off No. 1 heading? There are three cut-throughs in the heading altogether.
2626. Did not the blast follow the cut-throughs from bord to bord? In No. 2 heading it did, but not in No. 1.
2627. You said you found the caution-board opposite the last stenton? Yes.
2628. Do you think that was a measure of safety to allow the danger-board so near whereby a naked light could approach so near the heading? I think it was the proper place for it.
2629. Would it not be better and safer to have had the caution-board further back? Well, seeing that there was a stenton here giving a large current of air, the caution-board was placed right in the air current.
2630. You have already said it would have been better if the headings had been bratticed? Yes.
2631. In the absence of that bratticing would it not be better if the caution-board was placed further back, and thereby not allow naked lights to approach so near? No doubt the further the board was back the safer it would be if gas was in the heading.
2632. Have you not found gas on every occasion you have been in these two headings? Yes; every time I have been down.
2633. *Mr. Clarke.*] Do you think it was prudent to fire shots in these headings in the absence of an air current or bratticing? No; not in the presence of gas.
2634. *Mr. Croudace.*] Can you tell me whether the main tunnel is rising or dipping here [*showing place on*

on the plan] ? It is very flat along there, but there is a decline from this place to that [*places marked*] ; but in the place you refer to it seems to be very flat.
2635. Are you sure that it is not falling ? I could not say exactly.
2636. Are these headings Nos. 1, 2, 3, and 4 dipping ? They seem to rise toward the place.
2637. Commencing at the tunnel mouth where the large fall exists, and where you noticed signs of carbonised coal-dust, did you notice whether the dust was thrown in-bye as well as out-bye against the props ? At the point where I got the dust from 120 to 150 yards from the tunnel mouth it was on the in-bye side of the props.
2638. Which side of the main fall was that ? On the out-bye side of the fall.
2639. On the out-bye side of the fall the signs were on the in-bye side of the props ? Yes ; the dust was lying against the wall as there were no props there. I did not examine any of the props particularly near there ; but at a point which is marked on the plan, I believe the President took some dust from the in-bye side, and the props from which these samples were taken by the President from two different points are marked on the plan.
2640. Are they marked on the in-bye side or out-bye side ? I believe they are marked both sides as the dust, I think, was taken from the in-bye side and out-bye side of the timber.
2641. This being a gassy mine, and safety-lamps being used in the Hill End section, do you consider it prudent or safe to allow the lamps to be unlocked ? No ; all the lamps ought to have been locked.
2642. Do you consider it a prudent or safe thing for any man under any circumstances to tilt his lamp with a view of lighting the touch to fire the shot ? No, certainly not, I do not approve of it.
2643. Do you think by so doing the flame could possibly come outside the gauze and ignite the gas ? Yes ; if a man held the lamp horizontally or in a sliding position any length of time the flame would come through, and consequently light the gas outside the gauze of the lamp.
2644. And that would be wrong ? Certainly.
2645. Supposing I told you that we had evidence that more than one man has worked with a safety-lamp, the principal gauze of which was burnt away, and that he continued to use that lamp in this fiery district, what would you think about that ? He might just as well have had an open light.
2646. You would not credit such a thing ? No ; I never heard of such a thing.
2647. Would you consider it safe in gas to fire a shot with fuse ? I do not consider it safe to fire shots at all in the presence of fire-damp.
2648. You would not consider it safe to use a needle and squib ? Certainly not.
2649. Is it quite unsafe ? Yes.
2650. As a matter of fact do you think that shots should not be fired at all where there is the slightest trace of gas ? No ; but where it is absolutely necessary. The shots should be fired at night by qualified men, as at home.
2651. These heading lines that you have referred to, and which I have seen, did you carefully examine them to see whether they were burnt ? Yes ; they were small lines, like fishing lines, and were not burnt by the flame.
2652. And that you take as proof that no flame or body of ignited gas had gone outwards ? It had not been there, for if the flame had gone outwards it would have undoubtedly consumed these lines.
2653. There were four bodies and a horse discovered here [*marking the place*], and it was thought that the explosion had gathered fresh force from gas existing in the old workings, do you think there is the slightest cause to lead you to believe that was the case ? There is not the slightest indication. I have no hesitation in saying that I marked the position of these skips, and I think it is one of a number of evidences that the flame was not carried a great distance outwards. The horse found there has been smashed against the corner of that pillar [*place marked.*]
2654. Realising all the gas which you have seen here and the effects found in Nos. 1, 2, 3, and 4 headings and in the western, do you think these effects were caused by any large amount of gas ? No ; I do not think there was an explosion of a large amount of gas.
2655. Taking the extent or area of this Hill End district, independent of the old workings, which are completely severed by this dyke, does it not represent really a very small area of workings ? Very limited area. I have measured this area in one straight line, and I think all these headings and bords would form a straight line area of (say) 62 chains.
2656. In that case, supposing gas to be exploded in the inmost end, where it was known to exist, did it not extend over a small area, and has not the destruction been somewhat limited ? Yes ; it came out just like out of a gun.
2657. Now, coming to the ventilation of this mine, did you notice the door placed at the western district ? Yes, there was a regulating door there, but it is not there now ; it was so regulated as to allow a certain quantity of air to go into the western, forming up to Nos. 1 and 2 headings.
2658. There is a door between them ? Yes.
2659. And another door between Nos. 3 and 4 headings ? Yes.
2660. And one at the diagonal road ? Yes.
2661. Would these doors better serve their purposes if they were doubled ? If they had been doubled on the main tunnel the distance would be too short to allow a set of skips to pass through ; if the distance had been greater it would enable two doors to be put in and one could be opened while the other was shut.
2662. If a trapper boy had always been kept at the door would you consider that a sufficient safeguard ? Yes.
2663. Was it the utmost care that could be taken at this particular place ? Yes ; and the trapper boy must see that the door was always closed immediately the set passed through.
2664. Have you measured the air ? Yes ; repeatedly.
2665. Can you give me any idea of the quantity of air going from the western district up to the furnace ? Yes ; I have measured it very frequently. On the 25th, when I first measured it, the return air coming from the western to the furnace was 44,290 cubic feet per minute at 11 a.m. the same morning. At the same time the return from the Hill End district was 37,410 cubic feet per minute.
2666. That is the return air ; do you know the quantity that was going into each district ? The western intake at the time we got in that day was 10,200 cubic feet per minute, and the Hill End intake was 14,000 cubic feet per minute.
2667. Can you tell me the number of men that were employed in those districts ? I was told that there were

Mr. A. Gardiner. 12 May, 1887.

were between forty and fifty men and boys in the Hill End district and about twenty in the western.
2668. The total number of men and boys killed in the mine was eighty-one? Yes.
2669. How many horses were killed? Five.
2670. So, eighty-six men, boys, and horses would represent the number in these two districts for which you have altogether over 24,000 cubic feet of air per minute going in? Yes.
2671. Equal to 300 cubic feet per man? Yes.
2672. And that is three times the amount required by the Coal Mine Regulation Act? Yes.
2673. Taking these figures of the quantity of air which existed after the accident, would it not likely be more previous to the accident? Certainly there would be, as the conditions of the stoppings and the falls which occurred were all damaging to the intake air.
2674. In taking these quantities we are taking an adverse state of matters? Yes; adverse to what would be the case previous to the explosion.
2675. And we have three times the quantity required by the Act? Yes.
2676. Supposing the western district return airway to be stopped up, do you think it could be so stopped up as to prevent you from getting a large quantity of air? No.
2677. It is open enough now to admit three times the required quantity of air? Yes.
2678. Whether you have travelled it or not? Yes. I have been down the return of the Hill End district and passed the western, and searching for the body of a man named Wilson. We went down some 300 yards to the south-western main road, and we got on the top of a large fall. Although we did not go over it, there was a good space left for the admission of air. One large fall was 3 or 4 feet high, and I understood from the overman, White, that on the day of the explosion he was up there, and that he had previously made an appointment with Wilson to come down on the other side of the fall and to give a shout. That was about the time the explosion occurred.
2679. Whether you have travelled the airway or not, are you perfectly satisfied that there is area enough to admit under adverse circumstances three times the quantity of air required by the Act? Yes.
2680. You stated that the bodies might have been affected by heated air? Yes.
2681. Which would be the most sensitive to the effect of heated air or dust, the delicate skin of a human body, or inorganic substance such as the bark of a tree? The human skin, I think.
2682. Well, might these bodies, or the hair on those bodies, have been affected by excessive heat, and leave the bark of the timber unaffected? Yes.
2683. *Mr. Owens.*] You think it very inadvisable to take a lamp into these headings with the top gauze burnt off. Well, what do you think of a deputy that would allow such a state of things to exist? He was not doing his duty.
2684. And he ought to have provided a new gauze if the man working with the lamp asked him to do so? Yes, or send the man home.
2685. And such a man should not be a deputy? No, or anything else. [*The witness withdrew.*]

FRIDAY, 13 *MAY*, 1887.

Present:

DR. ROBERTSON, PRESIDENT.

MR. O'MALLEY CLARKE,	MR. CROUDACE,
MR. NEILSON,	MR. JONES,
MR. OWENS,	MR. HILTON.

Thomas Bissell sworn and examined:—

Mr. T. Bissell. 13 May, 1887.

2686. *President.*] What is your occupation? I am a miner and engine-driver.
2687. In what capacity were you employed in the Bulli mine on the day of the accident? I was working in the blacksmith's shop on that day.
2688. How far is the blacksmith's shop from the mouth of the tunnel? About 150 yards.
2689. How were you apprised of the accident? The noise caused by the explosion drew my attention that way. It was a loud rumbling sound, as if a runaway set was coming down the incline. I thought it was that at first; but on looking towards the tunnel I saw smoke rising up to a height of about 100 feet.
2690. It came out of the mouth of the tunnel? Yes; smoke and dust.
2691. Was that repeated? I cannot say that it was.
2692. You did not observe two ejections of smoke? No.
2693. What did you then do? I went to Bulli to tell the clerk of what had happened.
2694. What did you think had happened? My impression was that the gas had fired. On returning I entered the mine.
2695. Tell us what you did on entering the mine? I went to the main heading first, and after going up about 10 or 12 chains I found the road entirely blocked by a fall. The roof was down, and the timber was lying across. There were others there then. I went through a cross-cut and entered what is known as the horse road.
2696. Between the grip and the main tunnel? Yes; I went no further on that occasion. Later on in the day I went in again as far as the big fall, beyond the western heading.
2697. What o'clock was that? I think it was about 11 o'clock at night, and I worked there clearing away the fall till the morning.
2698. When you first went to the western was the ventilation in a defective state? Yes; it was burdensome to work there.
2699. Did you detect any after-damp? I cannot say that I did.
2700. As you cleared the fall the ventilation improved, I suppose? Yes.
2701. Were you one of those who went into the workings to recover the bodies? I went into the workings on Saturday evening, with about nine or ten others, into the western.
2702. With what object? It was supposed that a man named Wilson was still in the mine, and I went into his working-place.

2703.

Mr. T. Bissell. 13 May, 1887.

2703. To search for him. Did you find him? No.
2704. You did not go into the Hill End district? Not at that time. I did a few days afterwards.
2705. With what object? We went through to have a look at the mine.
2706. Who accompanied you? A man named James Charlton.
2707. You went in out of curiosity? Well we had been in the mine several times, and knowing that it was supposed a man was still left in the mine we thought it would be no harm to go in with safety-lamps. We went up the Hill End beyond the last stenton, between Nos. 1 and 2, towards the face.
2708. Did you see a skip there? Yes.
2709. Did you examine the mine for the purpose of arriving at a conclusion as to the cause of the accident, or did you see anything that led you to form an opinion? I believe there was an explosion of carburetted hydrogen.
2710. Why did you form that opinion? Because of the presence of gas and the wreckage.
2711. Anything more? I saw the bodies.
2712. What did you notice with regard to the bodies? Some of them had no hair on their heads.
2713. Did you examine the state of the mine, or the props, for any evidences of actual fire? I cannot say that I examined the props.
2714. You did not make a minute examination then? No.
2715. Still, the conclusion you arrived at, for some reason or other, was that an explosion had taken place? Decidedly.
2716. Do you wish to state anything further in regard to the accident? Well, I noticed that it was an exceedingly favourable day for an explosion. There was a sudden change in the weather, from a heavy to a light atmosphere, and knowing that atmospheric pressure has a great deal to do with the action of explosive gas, I came to that conclusion.
2717. *Mr. Neilson.*] When were you last in the mine? I think that was the last occasion when I was in with Charlton? I do not remember going into the mine since then. I know I was in with Mr. Jones, manager of North Illawarra.
2718. Had you permission to go in? Yes.
2719. *Mr. Hilton.*] Were you at the furnace on the day of the disaster? No.
2720. From what you saw of the state of the mine, do you think it would require a large amount of gas to cause the destruction you saw? Yes.
2721. Have you ever had any experience of the effects of an explosion previous to the Bulli accident? No.
2722. Then how do you form an opinion that it would require a large amount of gas to cause the destruction? I think it must have been a terrific explosion to reach so far from the place where it originated.
2723. *Mr. Jones.*] Were you employed in the capacity of engine-driver at the time of the explosion? No.
2724. Did you ever hear the workmen speak or refer to the probabilities of an explosion at Bulli mine? Casually I have heard the men talk about that kind of thing.
2725. When you saw or heard that noise you speak of did it surprise you in any way? Yes.
2726. Was it from conversations, or previous reports, that you apprehended it was an explosion? My impression was that it was an explosion.
2727. You say the bodies you saw showed signs of burning? Yes.
2728. Are you sure that they were burnt? That is my impression; one that I helped to carry out bore every evidence of being burnt.
2729. You say the men had no hair on their heads—I suppose you mean it was burnt off. Is that the part, the hair, that you would expect to show principal traces of burning? Decidedly.
2730. *Mr. Clarke.*] Were you employed in the mine during the strike? A little in the mine.
2731. In what part of the mine? At the new furnace.
2732. What was the ventilation like during the strike? I was only there while the new furnace was started. I cannot say about the ventilation there afterwards.
2733. Is the new furnace an improvement on the old one? It is almost identical with the old one—the same pattern.
2734. Would it increase the ventilation of the mine? That would depend upon circumstances.
2735. You do not know? Well, it should improve the ventilation.
2736. *Mr. Croudace.*] You say you noticed a great change in the weather between the morning and the afternoon? It was a very hot day, the 23rd of March.
2737. You described the change taking place, I understood? I mean that the day the explosion took place was an excessively hot day as compared with days previous to that.
2738. You had a knowledge of the old furnace? Yes.
2739. Can you tell me which has the greatest motive column, or, in other words, which has the greatest power, the old or the new furnace? The new furnace is the most powerful.
2740. Then the new furnace would be much better than the old? Yes.
2741. *Mr. Jones.*] Did you hear any of the officials speaking as to the change of weather and its effects? No; I knew that from my own study.
2742. Can you tell us what was the temperature on the day of the disaster? No, I cannot; but we were all remarking how very hot it was. It certainly was a very hot day. [*The witness withdrew.*]

Albert Smithers sworn and examined:—

Mr. A. Smithers. 13 May, 1887.

2743. *President.*] What occupation do you follow? I am a miner, residing at Bulli.
2744. Were you engaged at the Bulli mine on the date of the accident? Yes.
2745. In what part of the mine were you engaged? In No. 3 heading—the gassy section.
2746. How long were you engaged in that section? I worked about thirteen shifts since the strike.
2747. And before that, how long? Ever since the gas was found.
2748. That is ever since they pierced the dyke? Yes.
2749. Were you one of those who went into the mine after the accident? Yes.
2750. Immediately after? Yes; but I did not go very far in.
2751. Were you one of those who were employed getting out the bodies? Yes.
2752. Were you among the first to go up No. 1 heading after the accident? No.

Mr. A. Smithers. 13 May, 1887.

2753. Were the bodies out of that heading? No; I carried the first body out.
2754. Did you go with others to examine the heading, that is, inspect the condition of the workings? No; not in that heading.
2755. Did you examine No. 2 heading? No.
2756. Did you work in Nos. 1 and 2 headings before the strike? Yes.
2757. Did you find any gas given off there? Yes.
2758. Was it given off very abundantly as you approached the roll? Yes.
2759. Was it confined to the roll or did it exude from the coal? There was gas more or less all the time in the headings.
2760. Did the bords off the heading give off gas? Yes.
2761. Have you been into these bords since the accident? No.
2762. Have you worked in any other mine besides Bulli? I have worked at Mount Pleasant.
2763. Have you worked in any other—in fiery mines? No.
2764. Then you had no experience of gas or fire-damp before you went to Bulli? No.
2765. And you never saw an explosion, or the effects produced by an explosion, previous to that at Bulli? No.
2766. Before the strike, had you gas in Nos. 3 and 4 headings? I do not know.
2767. Did not you work in these before the strike? No; I worked in Nos. 1 and 2 headings.
2768. But since the strike, I understand you worked in No. 3 heading? Yes.
2769. Did you observe any gas there? No.
2770. You are quite certain of that? Yes.
2771. Did you ever complain to the deputy or management as to the quantity of gas, or of your being made to conduct operations in the presence of gas before the strike? Yes.
2772. To whom did you complain? To Mr. White and Mr. Crawford.
2773. What was the nature of your complaint? We complained on account of there being so much gas, and on one occasion Jackson went out and fetched Mr. White in about 9 o'clock. He (Mr. White) came in with two safety-lamps.
2774. Was that the first time you found the gas? Yes; and one of those lamps had a hole in the top.
2775. How long ago was that? That was when we first struck gas—about eighteen months or two years ago.
2776. Yes, but come to the time immediately before the strike? Well, on the Friday night before we came out on strike I was prevented, by White and Crawford both, from working in No. 1 owing to the accumulation of gas.
2777. Well, was that wrong—did you complain of that? I made a complaint on that very day. I was on night-shift then.
2778. But was that what you refer to as the subject of a complaint, that Crawford and White took you out of the heading on account of gas; I asked you first whether you had complained about the mode of conducting the workings and you said "yes," and explained that at that time the Hill End section was opening up; I then asked you whether you had complained to Crawford since; that being so long ago, and you said that "on Friday before the strike you complained"; but on interrogation I found that you did not complain, but that, from motives of safety, they asked you not to work—is not that so? They did not ask me until I pointed out it was not safe to work there. There was a blower there you could hear hissing for a hundred yards.
2779. But they were actuated by consideration for your safety in asking you not to work there? Yes; then they were, no doubt.
2780. Then since the strike, have you had any occasion to complain, or have you made any complaint to the management? No; I do not know that I have, except that I pointed out to Millwood one day that we had gone beyond the distance from air required by the Act.
2781. Since the strike—that is, since the new furnace was erected—was there a material improvement in the ventilation? There was in the main airway; but it was not improved much in the face.
2782. What was the reason of that? Well, there was no brattice.
2783. Was there any brattice before the strike? Yes; about 30 yards.
2784. Where was that? From the dyke into the gassy section.
2785. How long was that before the strike? When it was first struck.
2786. That, you say, was two years ago; I am asking about the time immediately before the strike? There was none that I know of.
2787. Then there was no brattice before the strike? No.
2788. Had brattice been put up to the face after the strike, would the ventilating current have been much stronger? Yes; certainly.
2789. Would that be on account of the greater force and power that the new furnace exercised for ventilation? Yes, but the furnace would not do it unless the air was carried to the face.
2790. Well, would that have been due to the greater power exercised by the furnace? I do not understand you.
2791. I am endeavouring to put it clearly to you—would the ventilating current have been stronger than before the strike if the brattice had been carried up to the face? Yes.
2792. Then I ask, would that greater current be due to the new furnace? Yes.
2793. Have you ever worked in any other mines than Bulli and Mount Pleasant? No.
2794. Then your experience is entirely limited to Mount Pleasant and Bulli? Yes.
2795. Did you ever fire any shots before the strike? Yes.
2796. In Nos. 1 and 2 headings? Yes.
2797. What method did you adopt? We fired the shots with touch-paper.
2798. And how did you light the touch-paper? Through the gauze of the lamp.
2799. Having no previous experience did it ever occur to you whether that was a safe practice or not? Well, I saw practical men do it, and I reckoned therefore it was quite safe.
2800. That is, I suppose you knew nothing to the contrary? No.
2801. How did you stam the shots as a rule? With clay.
2802. Did you never stam with small coal? No.
2803. Before firing the shots did you make any attempt to drive out the gas? Yes.
2804. Did you always take that precaution? Yes.

Mr. A. Smithers. 13 May, 1887.

2805. And if gas still existed, did you fire the shots? No; we brushed it out clean before we fired them.
2806. Did you use fuse? Yes, when we were working on our own account. We used the squib in the Company's employ.
2807. Do you know whether it was safe in the presence of gas to use fuse? I do not think there could be anything safter.
2808. That is to say you know nothing to the contrary? No.
2809. You have had no experience of any other mode of firing shots? No.
2810. *Mr. Neilson.*] In reporting this matter about the gas the night before the strike, did you think you were doing anything more than your duty;—do you know that when you find gas in the mine, or discover danger, it is your duty to report to the officials at once? Yes, if I considered it was not safe to work.
2811. In this case you did not consider it safe to work, and you reported it accordingly? Yes.
2812. That is, you did your duty—and what did they do? They brought us out.
2813. You say you swept out the gas? Not that night.
2814. In what heading was it? No. 1 and No. 2.
2815. In firing the shots, what length of fuse did you use as a rule? It would be according to the depth of the shot—about 3 feet.
2816. That would take about two and a half minutes to run before the shot went off? Yes.
2817. Was there any danger of the gas being swept back to the face before the shot went off? It might be so; but I was justified in firing a shot when I was given a piece of canvas for the purpose.
2818. Who gave you the canvas? Crawford, the deputy.
2819. *Mr. Hilton.*] You say you always drove out the gas in No. 1 and No. 2 heading? Yes.
2820. How long did it take for the gas to get back after you had driven it away? I cannot say.
2821. Did it ever return again after you had driven it away—I mean within a short time? Yes; it took fire on one occasion.
2822. Can you not give us some notion as to how long it would be after firing a shot when the gas would accumulate again? Well, after brushing the gas back I would light the shot, and I would not go in again directly the shot was fired.
2823. How long would you wait? Well, it might be 10 minutes.
2824. Would there be any gas in the place on your return? I cannot say.
2825. You never took any notice? No.
2826. *Mr. Owens.*] Did you work in any other part of the mine than the Hill End district? Yes; I worked in the grip, and a part they call Darlinghurst.
2827. Did you work in the western district? No.
2828. Did you hear of any one finding gas there? No.
2829. You say that the deputy told you to fire the shots in this manner, that is, with touch-paper? Yes.
2830. And you considered that whatever the deputy told you to do was right? Certainly.
2831. Did you find gas in other parts than Nos. 1 and 2 headings—did you find any in No. 3, for example? No.
2832. Did you find any in Nos. 5 or 6? In No. 5 there was on the Tuesday before the explosion.
2832. How much gas was there? It extended about 2 yards from the face.
2834. Did you report that to the deputy? No; I was on the night-shift at the time.
2835. Did not your mates report it? No; because it was about 12 o'clock when we left that night, and we had not the chance.
2836. Is there any rule that would prevent you from doing it—you know No. 6 rule? Yes; that rule says I shall not interfere with the management in any way.
2837. Do you consider the correct interpretation of this rule prevents you from reporting any danger in the mine? Yes, I do.
2838. And therefore you did not report it? Yes; I had not a chance, any way.
2839. Supposing you had had a chance? I should not have reported it.
2840. Would that be on account of this rule? Yes, and another thing, I had no business to go in there.
2841. Were you not working there? No; I was working in No. 3 at the time; I went there for a dirt skip.
2842. And you found gas there? Yes.
2843. Do you know whether the deputy was aware of the existence of this gas? I think he was.
2844. During the time you were working in that place, did you see the Government Inspector in there? Not since the strike.
2845. Did you ever report the presence of gas to the inspector? No.
2846. Why did you not? I do not know.
2847. Was your lamp locked while you were working amongst this gas? Sometimes it was, and sometimes it was not.
2848. Who would lock them? Crawford, the deputy.
2849. That was before the strike? Yes.
2850. Crawford was not there after the strike? No.
2851. *Mr. Jones.*] Who was the deputy after the strike? Millwood.
2852. Did he lock the lamps? No.
2853. You are quite sure of that? Yes, quite sure.
2854. Did you ever receive a copy of these rules (referring to "General and Special Rules of the Colliery")? I do not recollect having received a copy.
2855. Would you try and recall to your mind whether you did at any time? No, I could not; it is over ten years since I first started in the mine, and I do not recollect ever having received a copy.
2856. Did you work with naked lights after the strike? Yes.
2857. Do you think that a wise proceeding—to allow naked lights in proximity to a large quantity of explosive gas? No.
2858. You say you have seen and heard of blowers in Nos. 1 and 2 headings? Yes.
2859. Did you report that? Yes.
2860. To whom did you report it? To Millwood and Crawford.
2861. What steps did they take to remedy it? None.
2862. Did you suggest the propriety of bratticing this place? No.
2863. Do you think it would have been wise to brattice this place? I do.

2864.

Mr. A. Smithers. 13 May, 1887.

2864. You say that on one occasion you were some few yards before the air? Yes; that was since the strike.
2865. Was that in a bord or in a heading? It was in No. 3 heading.
2866. Did you complain? I spoke to Millwood about it.
2867. What did he say? Well, we were on a fault at the time, and he said that we would have to get over the fault first.
2868. Do you remember the particular day you spoke to White about this blower you have spoken of? One was at the very commencement of the gassy section; it was left standing there for a week blowing.
2869. *President.*] Have you complained since? No; there was no need to; he could see them as well as I could.
2870. *Mr. Jones.*] Was there any one in charge of the mine during the night-shift? No.
2871. Consequently you had no one to complain to without going out of your course? No.
2872. *Mr. Clarke.*] How many reports did you make to the overman or deputy that were not attended to during the time you worked in Nos. 1 and 2 headings? I cannot tell.
2873. You have said that you made general reports, and that no action was taken;—do you not know how many reports you made? Well, when the overman would come in we would show him the gas, and complain about it; it might be once a week. I would not swear how many times.
2874. Did he make any remark on these occasions? He told us to be careful. He told us on one occasion to work with our shirts on, to prevent getting hurt if anything happened.
2875. How long was this before the strike? A good while.
2876. Did you ever hear of a pipe being fixed to a blower? Yes, in No. 2 heading.
2877. Who put it there? Crawford, I believe.
2878. For what purpose? I do not know of any purpose. He put it there to show the manager, I thought.
2879. Did he say why he put it there? He never said so to me. I heard that he put it there to show the manager that there was gas there.
2880. Did the manager see it? Yes, I believe so, both the manager and the overman.
2881. How long was the pipe fixed to this blower? I think it was there till the commencement of the strike.
2882. It was there when you left the mine? Yes.
2883. Now, with reference to this No. 6 rule you take exception to—you say it debars you from making a report to the management. How do you make out it would be an interference by workmen to report the presence of gas? I will read the rule to you; it says:—

> "*Interference by employees.*—Any employee interfering in any way with the orders issued by the colliery manager or his overman, for regulating the work of the mine, shall be liable to dismissal without notice."

That is plain enough—"interfering in any way with the orders issued by the manager." How would you interfere with the orders issued if you were to report any existing evil or danger? Well, that is what the deputy is for.
2884. Oh, yes; but you said just now that you would not have reported any danger, because this rule prohibited you from doing so. How do you make that out? Because it says we are not to interfere with the orders of the management.
2885. Would the orders of the manager be to blow the mine up? No.
2886. Or to have gas in dangerous quantities—that would not be the order of the management? No; but there was a manager there to look after it.
2887. That is another thing altogether. You say you were prohibited from reporting danger because of the existence of this rule;—can you explain that in any way? Well, I considered that when I signed those rules I signed all my "say" away.
2888. Can you say you would be interfering with the orders of the management by reporting the existence of great danger to yourself and brother workmen, and the mine generally? I do not know that I would.
2889. Then why did not you say so before—why mislead people in any way? I did not intend to.
2890. *Mr. Croudace.*] In answer to a question by Mr. Jones, you said that Millwood never locked your lamps? Yes.
2891. Was that on the night or the day shift? The night-shift.
2892. Are you quite sure that is the case? Yes.
2893. Your name is Albert Smithers, and you gave sworn testimony at the inquest. Did you not swear this: "On Monday night, when we first started after the strike, we went to the cabin for our lamps, and Millwood handed us our lamps locked. Richards said to him, 'What are we to do if we get in the dark,' and Millwood said, 'I will leave the key'; afterwards he said, 'It is no use locking the lamps and leaving the key,' so he unlocked the lamps, and never locked the lamps afterwards." Is that practically your sworn evidence at the inquest? I believe it is.
2894. What are we to understand from this. In answer to one of the Commissioners you said Millwood never locked your lamps; and yet you have sworn that he did, and that at your request he unlocked them? Not at my request.
2895. Did he at the request of others? Yes; Richards. We never went to work with locked lamps.
2896. You have stated that you have no knowledge of gas? Yes.
2897. Have you any knowledge of the ventilation of a mine in any shape or form? Only from what I have heard them say.
2898. Then, of your own knowledge of gas, or the laws that regulate gassy mines, and the ventilation thereof? No.
2899. *President.*] You have said you thought you were signing away your liberty, and you would not report the presence of gas on account of a rule which you have since explained away. On that point I wish to put one question to you. Did you ever ask the management if it would be a breach of this rule if you were to report, in order to get a proper interpretation of this rule and its import? No.
2900. Did it never enter your head to put a question to Mr. Ross whether in the event of your reporting danger it would be considered a breach of the rules? No.

Mr. A. Smithers. 13 May, 1887.

2901. *Mr. Jones.*] I understand that at the time of your resuming work the lamps were locked, but that deputy Millwood was quite willing to leave the key? Yes.
2902. Now, what was the difference between leaving an open lamp and a locked lamp with the key—were they not virtually the same? Yes.
2903. *Mr. Owens.*] Assuming you are working in a place with safety-lamps, do you think a prudent overman would allow you to go in with unlocked lamps, even at your own request? No; it was a breach of the rule.
2904. *Mr. Hilton.*] Did Millwood make the proposition to go in with the lamps unlocked? Well, he said it was no use locking the lamps and leaving the key.
2905. *Mr. Croudace.*] In the first part of your examination you said that a lamp was brought in to you with a hole in the top? Yes.
2906. Who brought that lamp in? I suppose it would be Mr. White.
2907. Did Mr. White himself fetch it in? I will not swear that.
2908. What part of the top was broken? The gauze.
2909. Did you see it when it was brought in? No.
2910. You did not notice it till some time afterwards? Not till he went away.
2911. Did you put it out of work? Yes; I gave it to the deputy next day.
2912. Can you tell me who was the lampman? Crawford.
2913. Did you consider it was a prudent act, Crawford giving you such a lamp? No, certainly, if he knew about it.
2914. Should he have known about it? Yes; I should think so.
2915. Should he have ascertained, as deputy of the mine, that the lamps were perfect in all respects? Yes.
2916. And knowing that, was he not, in your opinion, an imprudent man to give you a broken lamp? Certainly. [*The witness withdrew.*]

Thomas Morgan sworn and examined:—

Mr. T. Morgan. 13 May, 1887.

2917. *President.*] What is your occupation? I am a wheeler, working at Bulli.
2918. Were you a wheeler prior to the date of the accident in the mine? Yes.
2919. In what district? The Hill End district.
2920. What roads did you attend? Nos. 1 and 2 headings.
2921. Were you engaged during the night or the day? During the night.
2922. Did you know that gas was given off in these headings—fire-damp? Yes; I have heard of it.
2923. You know what gas is? I have seen it in Bulli.
2924. Did you work with a safety-lamp? No.
2925. How long have you been aware that gas was given off in these headings? I knew it before the strike took place.
2926. How far did you go with the skips beyond the danger-board? I went in to fetch the full skip out from the face.
2927. You know the object of the danger-board? Yes, for stopping the people from passing with a naked light.
2928. Did you ever pass with a naked light? No.
2929. Where did you hang your lamp? Outside on the prop, sometimes I put it on the ground.
2930. Did you ever see the gas ignited in any of these headings? Yes; I saw it ignited off a shot there one night.
2931. Where were you when the shot went off? I was going into No. 1 heading, and it ignited in No. 2 heading.
2932. When was that? A week before the explosion.
2933. That is since the strike? Yes.
2934. Had they got the roll in the heading at that time? No; I do not think they had.
2935. Where did the flame extend to? It just blazed up the side.
2936. How did you happen to see that? I went in with an empty skip.
2937. What size was the flame? About 6 inches high, at the side of the face near the shot.
2938. Did the men assign any reason for the gas taking fire there? No.
2939. Did they say they had struck a blower? Yes; Westwood did.
2940. Did you ever see the gas fire in No. 1 heading? Yes.
2941. How did it occur? It took fire off a naked light.
2942. When was that? The night before the explosion took place.
2943. Was Hope in the heading that night? Yes. Hope was filling a skip of slack about half-way between the face and the heading. He told me to hang the lamp on a prop at the danger-board, so that he could see better, and it ignited off my lamp.
2944. Where did it go? Into the face of the heading, 4 or 5 yards.
2945. What did you do? I took my lamp off the prop, blew it out, and ran into the next heading and told them the gas had fired.
2946. Did you report that afterwards? Not that night; I never saw anyone to report it to.
2947. Was it not of sufficient importance to mention—did you converse about it with anyone? Not that night.
2948. Did you consider it dangerous? Yes, I did, and if I had seen anybody connected with the mine I would have told him.
2949. Then you did not consider it sufficiently important to seek the overman and report to him—where were you next day? I was down on the beach.
2950. Was it not more important to see the overman than to go on your own pleasure? I would have told him next evening.
2951. That was your intention, was it? Yes.
2952. Have you seen frequent blowers in this heading? Before the strike I did.
2953. They were not as frequent since the strike? No.

Mr. T. Morgan. 13 May, 1887.

2954. Going along the roads, as you were in the habit of doing, did you notice any marked difference in the ventilation since the strike, comparing it with the ventilation before the strike? It was stronger after the strike.
2955. Was the quantity of air going through the last cut-through much stronger? Yes.
2956. That current of air would sweep past the danger-board? Yes, close past—outside the prop.
2957. *Mr. Neilson.*] When you saw the gas fire that night, were you frightened? Well, yes; I was frightened at the time.
2958. How far did you live from the mine? About 1¼ mile.
2959. Did you pass by Mr. White's house? No.
2960. How far is Mr. White's house from the tunnel mouth? About 200 yards.
2961. It would not have taken you long to go that far? Well, it was pretty late in the night, and I expect he would have gone to bed.
2962. Supposing this explosion had not occurred, would you have reported what you saw? Yes, I would.
2963. Did you tell your father? After the explosion I did.
2964. You saw you father, I suppose, and you did not even report it to him? No.
2965. Yet you say you had intended to report to Mr. White? Yes.
2966. How did the men fire their shots? In No. 1 heading they fired with touch-paper.
2967. And in No. 2 heading? Sometimes with touch-paper, and once or twice I saw them use a match; that is when there was no gas present.
2968. How many times did you see them fire shots with a match? Once or twice.
2969. Did you not think that strange? No; I supposed they fired with a match if there was no gas present.
2970. Were they working with safety-lamps when they fired with a match? Yes.
2971. *Mr. Hilton.*] Was there anyone in charge of the mine during the night-shift? No.
2972. If there had been anyone in charge of the mine when the gas went off, would you have reported it? Yes.
2973. You have no doubt about that? No.
2974. *Mr. Owens.*] You say you hung your lamp outside the post where the danger-board was? Yes; on the right side.
2975. And the gas caught fire from there? Yes.
2976. Then the gas must have been up to the danger-board? Yes.
2977. Did your work take you to all the bords in No. 1 heading? I was in the headings.
2978. Not in the bords as well? One bord.
2979. Did you ever detect gas there? I never went into the face to see.
2980. *Mr. Jones.*] I suppose you have no practical knowledge of shot-firing? No.
2981. Did you ever hear the men in the headings complain of a deficiency of air at night? No.
2982. Did you not hear them complain on the last night you worked? No.
2983. *Mr. Croudace.*] You know the door between the headings No. 1 and No. 2 on the main road? Yes.
2984. And do you know the door on the diagonal cut-through? Yes.
2985. Did you ever see that door propped open? One night when I went in there I found that door propped open.
2986. Have you any idea who propped it open? No.
2987. Did you ever prop it open? No; only to let the skips pass through.
2988. Did you prop it open regularly in allowing the horses and tubs to pass through? Yes, and I would shut it afterwards.
2989. Did you ever leave it open, or forget to close it? No.
2990. Did you ever hear of it being kept open at any other time than you have mentioned? No, not that one.
2991. Have you ever worked in the daytime as a driver? Yes, but not in the headings.
2992. Did you ever know of that door being left open during the daytime? I do not know that that door was there before the strike.
2993. But since the strike? I have never worked during the daytime since the strike.
2994. Have you heard amongst the lads of that door being left open during the daytime? No.
2995. *Mr. Jones.*] Was it when you first went into your work that you found the door propped open? Yes.
2996. Was there a boy employed as trapper at that door? Not in the daytime.
2997. But at night? No.
2998. About what time would you have to prop it open to take your skips through? I cannot say; it would be taken there at all times.
2999. Then it was frequently open. How long would it take for your skips to pass through a door? Well, we would go straight through. [*The witness withdrew.*]

Thos. Woods sworn and examined:—

Mr. T. Woods. 13 May, 1887

3000. *President.*] You are a miner, and had been working in the mine since the strike, at the time of the accident? Yes; I worked in No. 2 heading.
3001. When were you first in the mine after the accident? About 10 o'clock of the evening it happened.
3002. With what object did you go in? To try and get the bodies out.
3003. How long after the accident was it that you examined No. 1 and No. 2 headings and the bords off them? Well, I never was in them—not to the face.
3004. Have you been in the bords since? I was only in one bord, the sixth, off No. 1 heading.
3005. Was that to recover a body? Yes; it had been reported to me that there was a body there.
3006. Were you in No. 1 and No. 2 headings when the bodies were discovered on the Thursday or the Friday after the accident—did you see the bodies lying on the road? No.
3007. Did you work in No. 2 heading? Yes, on the night-shift.
3008. Where did you work before the strike? Principally down in the Hill End section.
3009. Did you work in No. 1 and No. 2 districts? I worked in both; I worked in the first bord off No. 2 before the strike, and I worked in No. 3 heading when it was turned away, and I also worked in No. 6 heading.
3010. Did you observe gas in any or all of these before the strike? In the bords, no; in the headings, yes.
3011. Did it exist in large quantities? No, not very large.

Mr. T. Woods. 13 May, 1887.

3012. In No. 3, was there a large quantity? No; there was only a little on the main road when I worked in there.
3013. Did you take any notice of the places where the gas showed with the greatest freedom? It was on the top, lying pretty close to the roof.
3014. Was it between or near the faults? We would generally get most of it on the faults or rolls.
3015. Did you ever strike any blowers? Yes, many a one.
3016. In what heading? In No. 2.
3017. Were they more common in No. 2 than in No. 1? I cannot say—I never worked in No. 1 heading.
3018. Did you ever know of those blowers being fired from a shot? No.
3019. Did you ever hear of any—we have been informed that a blower was fired from a shot in No. 2 heading? No.
3020. Did you ever see gas fired in No. 2 heading? No, I did not.
3021. Did you ever hear of gas being fired in any heading? Yes, in No. 1.
3022. When was that? On the night before the explosion—on Tuesday night.
3023. It fired on the Tuesday night? Yes; I heard the young wheeler singing out that she had fired.
3024. Then you were working on the night-shift on Tuesday night? Yes.
3025. And the wheeler informed you? Yes; I was about to go in, but they sung out that the gas was out, and I turned back again.
3026. Since the new furnace was started, was there a larger quantity of air passing through the last stenton than before? Yes.
3027. Did you work with your lamps unlocked since the strike? Yes.
3028. And before the strike? Well, they were both locked and unlocked; for the last fortnight or three weeks they were locked.
3029. Were they locked on the night-shift? No; mine was never locked on the night-shift. Of course I cannot speak for everybody.
3030. Did you complain to the management of the state of the workings since the strike? No.
3031. You had never cause to complain? No.
3032. Were you satisfied with the amonnt of ventilation in these headings? Yes.
3033. Where was the danger-board erected? Beside the last stenton.
3034. The danger-board thus erected was level with the sweep of the ventilating current as it passed through the stenton? Yes, inside if anything.
3035. Beyond the danger-board no naked lights were supposed to be taken? No.
3036. Did you ever see naked lights taken beyond that danger-board? I have seen them beyond it, but not very far—about a yard perhaps.
3037. Whose were the lights you saw? I have seen the wheeler, but I have seen different men; they were not particular whether they were outside the danger-board or inside.
3038. In the event of the men desiring to smoke, where did you smoke? At the danger-board, outside.
3039. We have been informed that a naked light has been found in the heading near the face where you were employed;—can you account for that? No; I have not heard anything about it.
3040. Your mates, I presume, were lost? Yes.
3041. Were your mates, in your opinion, careful men? Yes; I think they were.
3042. So far as you can judge, do you think they would be likely to take an open lamp into No. 2 heading? I would not think so.
3043. You would give them credit for more caution? Yes.
3044. Did any force of gas exist in No. 2 heading during the last shift you worked? No.
3045. Was the gas greater in quantity during the last shift or less than on any previous occasion? It was greater.
3046. Where did it issue from? Out of the coal, I expect.
3047. What thickness of coal was there in the face on the top of the roll? About 4 feet of coal.
3048. Then in crossing this roll, when it was beginning to descend, going across the top, did you hole the coal? Yes, and afterwards nicked it.
3049. You did not go into the face? No.
3050. Do you consider that the gas, when you were working in No. 2 heading, existed in such quantities as to deter you from shooting? Yes, with the same amount of gas as was present on Tuesday night.
3051. Would there be, in your opinion, any danger in drilling a hole on cutting a joint or blower? There might be.
3052. Have you ever seen a blower struck in a drill-hole? Yes.
3053. In the last shift, did you take off the coal with a pick only? I was only fetching the stone up last shift.
3054. In which case you would use powder? Yes.
3055. In blasting the coal in No. 2 heading, how did you tamp your shots? With wet tamping.
3056. Would you consider wet or dry tamping the safer? Wet tamping I should say.
3057. Did you ever use shale or stone for tamping? No; always coal.
3058. Where did you get your water to damp it? From a billycan.
3059. Did you use fuse? Yes.
3060. How far would the fuse project beyond the hole? It would depend upon the man who has the shot.
3061. Do you consider it dangerous to use fuse in the presence of gas—that is, do you think the gas might be ignited from the fuse? I should not think so.
3062. If you were informed that gas has been lit from fuse, would you be surprised? I should; I do not think it would light from fuse itself.
3063. How did you light the fuse? With touch-paper.
3064. And how did you light the touch-paper? On the lamp.
3065. Did you retire beyond the danger-board? No; I lit it with the safety-lamp by tilting it.
3066. That is, you tilted the lamp so that the flame would beat upon the gauze, and you would put the touch-paper to the flame? Yes.
3067. And you retired no distance towards the danger-board when you lit the touch-paper? No; I lit it opposite the hole.
3068. Did you take any steps to remove the gas from the place? Yes; if gas was there I would brush it.
3068½. Did you make it a practice to test for gas? Yes, if it was in the coal; if it was in the stone I would not bother, because the shot would be away from the roof.

Mr. T. Woods. 13 May, 1887.

3069. Supposing the stone came within 3 feet of the roof, would you test for gas? It all depends; I should know if there was a great quantity; I could smell and taste it.
3070. Had you much experience in coal-mining before working at Bulli? None in gassy sections.
3071. Then your whole experience of gas has been gained at Bulli? Yes.
3072. You state there was about 4 feet of coal in the face of No. 2 heading—that is on top of the roll. You also say that if you had a shot in the coal you would consider it your duty to test for gas before firing the shot; but that if it was in the stone you would not bother. Now, there was 4 feet of coal on top of this roll;—in blasting off the roll, would you consider it an expedient and a precautionary measure to test for gas? Yes.
3073. Then you want to amend your former answer to that question—that in the case of a roll, such as at present exists in No. 2 heading, you would consider it a precautionary and safe measure to test for gas before firing the shot? Yes, if the shot was up where you say.
3074. Did you notice whether the gas that issued from No. 2 readily took fire—was it a "quick" gas? Yes.
3075. This is probably not a right question to put to you, because you have had no experience in gassy mines other than Bulli. You have seen the gas firing in the lamp? Yes.
3076. In which case what did you do? I have drawn the lamp away.
3077. Did you reduce the length of the flame? I generally pulled down the blaze.
3078. With the lamp full, what would you do? Draw the lamp away.
3079. *Mr. Neilson.*] Did you report the extra quantity of gas that night? No.
3080. What quantity of gas was there in that shift? It was back from the face about 20 yards.
3081. What thickness would it be in the face? About 3 feet from the roof. It would take the lamp 3 feet from the roof in the face.
3082. Did you fire any shot that night? Yes.
3083. What, with that quantity of gas in the face? There was not the same quantity when I fired the shot.
3084. What time was it when you fired the shot? I suppose it would be getting on for 8 o'clock.
3085. And at what time did you find this large quantity of gas? When I went in, about half-past 4 o'clock.
3086. Did you attempt to brush the gas out before firing the shot? No.
3087. Yet you knew the gas was there? There was not much gas there.
3088. Where was your hole? Right on the bottom—straight in.
3089. Were your lamps ever oiled? Yes, at times; if the lamp happened to fall it would get oil on the gauze.
3090. Do you consider there would be danger in the flame of the lamp communicating with the oil on the gauze? There would not be that much of it to take fire.
3091. Have you not seen oil above the flame on the top of the gauze? No.
3092. Did you ever fire a shot with anything else but touch-paper in No. 2 heading? Yes; I have lit a match to fire it twice.
3093. How long ago was that? The first week I started; but she was back against the stenton then.
3094. Did you ever unscrew your lamps to clean them without going behind the danger-board? Yes, I have done that.
3095. Did you ever smoke inside the danger-board? Yes.
3096. How long ago is that? The last time we started.
3097. Were you ever cautioned, just before the explosion, not to take pipes and matches into the face? Yes; that was on Monday night.
3098. What inference did you draw from that? I thought she was beginning to make gas.
3099. You knew Millwood? Yes.
3100. What sort of feeling existed between the men in this heading and Millwood—was it a good feeling, and were you on friendly speaking terms? Yes.
3101. Did Millwood ever tell you to be cautious? No.
3102. Did no one ever tell you to be cautious? No, only Mr. White.
3103. *Mr. Hilton.*] Did you ever see Mr. Millwood take a naked light inside the danger-board? No; I cannot say I did.
3104. You say you sometimes brushed the gas out? Yes.
3105. Did you ever take notice how long it would be after brushing the gas away before more gas accumulated? Not a great while would elapse; but it would give you time enough to fire a shot before coming back.
3106. Would it come back in any quantity half-an-hour afterwards do you think? Well, not in the same quantity.
3107. *Mr. Owens.*] When you brushed the gas out, did you brush it beyond the stenton? No; we just brushed it away from the face.
3108. And was the overman aware of this practice? The deputy would know.
3109. When you were putting horizontal shots in, the flame would naturally fly to the roof? Yes.
3110. Did you ever notice gas fire from the shots? Yes.
3111. Was the deputy aware of it? No.
3112. Did you report it? No.
3113. What was the reason you did not report it? I did not know that there was any reason to do so.
3114. You did not consider it of sufficient importance? No.
3115. Did you find gas in any other part of the pit save in No. 1 and No. 2 headings? Yes; I have seen gas in No. 6, and I have seen gas in the straight, and in No. 3, though I never worked in it. That was before the strike.
3116. Did you see any in the western district? No.
3117. Did you notice whether the bodies you saw were burned? Yes, and some of them were burnt pretty severely too.
3118. Did you notice those you found on the straight tunnel—the incline? Yes; they were burnt.
3119. *Mr. Jones.*] Did you ever receive a copy of these special and general rules for the guidance of the men and boys employed in the Bulli Colliery? Yes.

Mr. T. Woods. 13 May, 1887.

3120. I understood you to say that previous to the strike safety-lamps were used in the bords in Nos. 1 and 2 headings? Yes.
3121. Do you think the ventilation afterwards had so far improved as to justify the abandonment of safety-lamps in these places? It would be very hard for me to answer that.
3122. I understood you to say you were quite satisfied with the mode of the ventilation up to the time of the explosion. Would bratticing in Nos. 1 and 2 headings have afforded a larger measure of safety in conducting into the waste the gas thrown off? Yes; the gas would not have remained there.
3123. Did you ever receive any instructions as to the method of firing shots? No.
3124. Never from the deputy? No.
3125. You stated that you had seen blowers in No. 2 heading? Yes.
3126. Roughly speaking, in your opinion, did they give off a large quantity of gas? Well, a good deal.
3127. Did you report to any one? No.
3128. Why did you not? I did not think it was worth while making any bother over. I did not think there was any danger in it.
3129. That might arise from your imperfect acquaintance with gas. Supposing you had had an extended knowledge of the subject? That might have made a difference.
3130. *Mr. Croudace.*] In these bords in No. 1 heading, where you say they worked with safety-lamps previous to the strike, were they giving off gas since the strike? No.
3131. Have you looked for any? No.
3132. Do you know, as a fact, that there is none? No; I never saw any.
3133. If there is none, would not that justify them in using naked lamps where they previously used safety-lamps? Yes; I suppose that was the reason.
3134. As to these blowers, did they not exhaust themselves in time? Yes; I have seen them blow for three days and then go off.
3135. Did you ever see the door between Nos. 1 and 2 propped open? No.
3136. Could you give us any opinion of your own as to how this explosion arose? No; I think not.
3137. Have you never talked it over with your fellow-workmen? You have given such straightforward evidence, honestly telling us you have done what is clearly wrong—going inside the danger-board with naked lights, and firing shots in the presence of gas—that it leads me to have confidence in you, and induces me to ask you if you have ever talked over the matter with your fellow-men in any way? No; I have not.
3138. On the night before the explosion, who were your mates? On the day-shift, Joe. Crofton and Jerry Westwood; and on the night-shift, Jim Salisbury. [*The witness withdrew.*]

Frederick Robbins sworn and examined:—

Mr. F. Robbins. 13 May, 1887.

3139. *President.*] You are a miner, residing at Bulli? Yes?
3140. How long have you worked in Bulli? Twenty-one years—ever since it commenced, until recently.
3141. In what capacity have you been employed? Ten years as a deputy.
3142. In what districts have you worked at Bulli? In No. 1 and the grip.
3143 Do I understand by No. 1 the Hill End section? No; further down in the old workings on the south-western side.
3144. Have you ever worked in other mines than Bulli? Yes; in England and Wales for many years.
3145. In districts where a considerable amount of fire-damp exists? Yes.
3146. And you know the composition and the danger of fire-damp? Yes.
3147. And the principle of the safety-lamp? I do.
3148. Where were you, Mr. Robbins, at the time of the accident? I was at Robbinsville, working at my own place.
3149. And being apprised of the accident, you proceeded to the mine? I did, and arrived at Bulli about half-past 4 o'clock in the afternoon.
3150. Did you proceed into the mine? I did.
3151. As you are conversant with the mine, would you give us your own story, as shortly as possible, as to what you did and where you went? On reporting myself to Mr. White, he asked me to take charge of a gang of men, which I did, and entered the mine. The first thing I noticed was the overcast forced up. We passed on, making everything right as we went, the carpenter, Jones, with others, repairing the overcast. We then proceeded up to the top of the Hill End bank, known as the western junction, and finding a door blown down, put up canvas. Before arriving at this point I found some stoppings had been temporarily repaired.
3152. What was the state of the atmosphere? It was considerably deranged.
3153. Was it hot? Yes.
3154. Did you see men lying on the bank-head? I did.
3155. Did you closely examine them? I did, and ordered them to be wrapped in canvas.
3156. Did you notice their appearance? I did.
3157. Have you had previous experience of explosions? Not as bad as this, but have been in light explosions.
3158. Did you believe these men's bodies were burnt? I did.
3159. Did you actually notice that they were scorched? Yes; Jackson and another. I considered them worse mangled than some of the others on the immediate scene of the action.
3160. Did you consider their appearance denoted actual contact with flame, or that it was due to heated dust? From an actual explosion, I should say.
3161. Why? Owing to the appearance of the hair, which was entirely singed.
3162. Were you of those who first went up No. 1 and No. 2 headings? I proceeded as far as the inner flat that evening. Ross overtook me at that spot. I had to be assisted out that night, as I was overcome by the after-damp. I returned about 10 o'clock next morning.
3163. The doors on the main tunnel between No. 1 and No. 2 headings and also that on the diagonal road were destroyed? Yes; both of them were blown out.

Mr. F. Robbins. 13 May, 1887.

3164. You proceeded up No. 1 heading? Yes.
3165. And saw the different bodies lying there? Yes.
3166. Did you closely examine them? Yes.
3167. Did you identify the bodies? I identified two of them as being the Brodies—having worked in one bord together. They worked in the right-hand bord in No. 1 heading.
3168. Had they, in your opinion, been overtaken by the after-damp, or were they burnt? My opinion is that they were instantly killed by the explosion, and that they fell in the act of running.
3169. How could they have had any time to run from the face if they fell at the instant of the explosion? A sensation is felt on the drum of the ear in an explosion owing to the stagnation of the air, and a man who is in any way accustomed to such occurrences would immediately run.
3170. But you are quite aware, surely, that an explosion is as sudden as a flash of lightning, and a man would therefore not have time to run a step? I think a man could run a short distance, but of course at the immediate scene of the explosion he might not have time to move a step.
3171. Were these men burnt? Yes.
3172. Did you observe among these men one sitting on a piece of coal? Yes; that was the deputy Millwood; I think he was near the inside cut-through, sitting with his head leaning on his left arm.
3173. You knew him? Yes, well.
3174. Who was present with you at the time? Crawford, and some miners who recognized the bodies better than I did.
3175. So far as the evidence has gone up to the present, the majority of witnesses agree that Mr. Millwood was found amongst the first group above the tunnel? My opinion is that he was found below the inmost stenton, betwen the two last stentons; and the body of a man who was working in the face of No. 2 heading was found about 6 ft. outside of him on a heap of slack.
3176. Did Millwood bear traces of burning? No; I do not think he did; his body was less affected than any other in the mine that I saw.
3177. Did you afterwards examine that district of the mine for the purpose of arriving at some conclusion as to the cause of the accident? I did not examine the district with a view to giving evidence in any way whatever.
3178. It was simply with a humane object that you entered the mine? Yes, but I could see what was the matter.
3179. Did you examine the headings? Yes.
3180. Did you discover gas in any of the bords or headings? I did not discover gas to the extent that would fire in any lamp, but it might be present.
3181. You mean to say that the quantity, if any were present, would be too small to be indicated by a lamp? Yes.
3182. In what condition did you find No. 2 heading? In No. 2 heading the gas would explode in the lamp—it was as quick as ever I saw it.
3183. In No. 1 heading what was the condition? Much the same as in No. 2—it would show in the lamp.
3184. Did you form any opinion as to the cause of the accident? Yes. Even before I went into No. 2 I cautioned Crawford that we must be careful in going into No. 2, as having seen Westwood's body, I expected to find gas in there if anywhere, as I thought there might be a shot in there.
3185. Was Westwood's body burnt? Yes, it was burnt, but not so much as the other bodies further down.
3186. Did you observe the props charred in No. 1? Yes.
3187. Did you go down and examine the bords off No. 2? Yes, every bord and facing.
3188. Did you observe evidences of burning and flames? Yes.
3189. Then what opinion did you form as to the cause of the explosion? I thought that a shot had been fired in the face of No. 2 heading, and that perhaps there had been an overcharge of powder; and I thought to myself that the shot had done its work, and well.
3190. Had you ever been in that district before? Yes, on two occasions.
3191. Did you observe gas on those occasions? Yes.
3192. From your experience of Bulli, would you expect to find more gas in approaching those rolls so frequent in that colliery? I should.
3193. As a matter of fact, did you know where the gas did issue in greatest abundance from those rolls? Yes; but it does not follow that it all issues from the rolls, because I know to the contrary, from the fact that Bulli gave off carburetted hydrogen since passing the dyke, and it was giving off choke-damp before that.
3194. Did Crawford talk to you about the blowers at Bulli during your examination? Yes. When we were walking along where the air was passing the main tunnel we put a naked light to the side of the rib and it freely exploded.
3195. What was the length? Not a great length.
3196. It would be quite possible to tap one of those blowers in the act of drilling a hole? Yes.
3197. Would a freshly blown-out shot have a tendency to light the gas if it existed near the face? It might if there was an accumulation of gas previous to the drilling of the hole. An overcharge of powder, in my opinion, of course would explode gas—one part of the explosion does its work, and the other expends itself in space.
3198. Supposing a blower to be intersected by the hole, would a shot have any tendency to ignite the gas in the hole? I do not think it would be possible for much gas to exist in a hole that was well rammed up.
3199. Doubtless, it would be stemming up the gas as well? I do not think so much gas would exist as would escape while it was being tamped.
3200. Do you think there was a large accumulation of gas in this colliery? I do.
3201. Where would it be necessarily confined to? That I would not like to say without working there.
3202. You know that it is carried on the air, being the lighter substance. Supposing there was 12,000 ft. of air travelling through the last stenton, would you be likely to detect gas on the outside of the stenton? It might be.
3203. Would that quantity of air be sufficient to dilute it and render it harmless? It would if there was not too much gas.

Mr. F. Robbins. 13 May, 1887.

3204. We have only the evidence of the men as to the amount. So far as we know blowers had been struck in two places in the mine only? Well, I should think you would not discover gas outside the stenton in that case.
3205. Do you consider Bulli a naturally dry and dusty mine? Yes.
3206. Do you know anything of the action of dust in the presence of an explosion through gas? Well, I know there is a theory on the subject, but I am not prepared to fall in with science as to that.
3207. Do you think coal-dust would intensify the action of gas? I do.
3208. And that it would probably prolong the effects of an explosion? Yes.
3209. In the case of No. 1 and No. 2 headings giving off gas, would you consider it a wise precautionary measure to carry bratticing within a reasonable distance of the face? Certainly; that is the known and best method.
3210. You have no doubt about that? No.
3211. You would have adopted that method in this case? If I found gas being given off, yes, I should adopt that method.
3212. Now, would you look at this plan for a minute. This is the main tunnel and the intake. A door is placed between Nos. 1 and 2, and also in the diagonal road between No. 1 and No. 2 for the purpose of taking the intake air up to No. 1, which is therefore the intake. Would you consider under the existing conditions here, of gas being given off at the face of Nos. 1 and 2 headings, that it would be safe to permit open lights to be used in these bords off No. 1? I should not.
3213. These bords were worked with open lights, the headings were worked with safety-lamps. Suppose these bords gave off no gas, and the heading was the intake, and a large volume of air such as 12,000 ft. per minute, was passing, would naked lights be safe? In my opinion naked lights are safe nowhere where light carburetted hydrogen is given off.
3214. Would you consider it safe for naked lights to be used in those bords without sweeping out the gas from No. 1 and No. 2? I should consider it very dangerous to work with naked lights in those bords, because the gas is carried with the air.
3215. In view of gas being given off in these headings, would you consider it safe to tamp a shot with small coal? No. I should not consider it safe to tamp shots in the presence of gas. From past experience in the world you cannot gauge the exact amount of danger. I think a man ought to be very careful.
3216. Well, shots being permitted, would you consider it a safe operation to tilt the flame of a safety-lamp on to the gauze in order to light the touch-paper? No, I certainly should not consider it safe.
3217. Can you suggest any other mode? Yes, I prefer a wire.
3218. Passing the wire through the interstices? Yes.
3219. Gas is known to be given off in the advanced districts—these headings, Nos. 1 and 2; would you consider it good mining to win all bords, both off the intake and the return? Perhaps it would be better to have a third heading.
3220. In what way would that render these bords more safe? It would be ventilated on the intake then; your return air would go back on the centre heading.
3221. In that way you would consider it quite safe? Yes, provided there was sufficient ventilation going through the bords. It is the accumulation of the gas that brings about the danger.
3222. Supposing a blower was suddenly struck, and the ventilating current was carried round these bords, would it be safe then? Yes, provided there was a sufficiency of air to render the gas non-explosive.
3223. Did you examine Nos. 3, 4, 5, and 6 headings? I did.
3224. Did you discover any gas? I discovered the appearance of gas in the lamp in all of these, the ventilating current at the time being arrested.
3225. You would more readily detect gas if it existed, under those conditions? Yes.
3226. You know the western district? I do.
3227. Have you ever discovered gas there? No.
3228. *Mr. Neilson.*] You say you do not believe there could be a sufficient quantity of gas in No. 2 heading, unassisted, to cause the damage you saw in the mine? I really do not think so.
3229. You think it was assisted? Yes, by accumulations of gas previously unobserved.
3230. Where was it likely that gas could accumulate—in the first bord off No. 1? If No. 1 was the intake it is scarcely likely that it would.
3231. *Mr. Hilton.*] Where would this gas you talk about accumulate? Anywhere in the old workings.
3232. Could you give any reason for such an accumulation? Only an insufficiency of ventilation.
3233. Are you aware that there was a door at the junction of the western? Yes.
3234. The object of that door was to cause a portion of the air to go up to the gassy section? Yes.
3235. Supposing anything happened to that door for an hour, say, or two hours, would not that interfere with the ventilation considerably? Yes.
3236. You say you have worked in the Bulli Colliery twenty years, and ten years as deputy?
3237. You would have some knowledge of the management then, the principal and his overman. Do you think these gentlemen careful and capable? I can speak of Mr. Ross as being an exceedingly careful manager. I said as much at the inquest, and I could not say different. Mr. White is not as able as he was perhaps.
3238. Why not as able? I think he received an injury some time ago that affected him mentally.
3239. How long after the explosion was it when you got to the mine? It was about two hours afterwards.
3240. Were you amongst the first party? No; there were three parties in before me.
3241. Did you notice any stoppings blown out in No. 1 heading? Yes.
3242. During your tenancy of office as deputy, were you using safety-lamps? I was in the grip district—in the south-western side of the western.
3243. Did you know Mr. Millwood? I did.
3244. Do you think he was a cautious man? He may have been sufficiently cautious.
3245. Do you think workmen should be allowed to fire their own shots indiscriminately? They would not if I were deputy.
3246. As an experienced man, do you think the return air-course should be travellable? I do.
3247. You have been connected with the Bulli mine, until recently, ever since it began? Yes.
3248. Have you a recollection of a man being killed there by the gas some years ago? Yes, I have; a man named Twaddle, I think.

3249.

Mr. P. Robbins. 13 May, 1887.

3249. Then as a matter of fact you had gas in the Bulli mine before you got the dyke? Yes, that was many years ago.
3250. How many years ago? Sixteen years ago, more or less—I cannot say exactly.
3251. *Mr. Croudace.*] I understood you to tell us, Mr. Robbins, that the only time you had known gas in Bulli, was when you struck the dyke in the Hill End district? I do not think so; but if I did I must certainly contradict the statement, because I could not have intended to say that. The gas came as soon as this whin dyke was struck, but there was scarcely any given off so far as I know from twelve to fourteen years previous to that.
3252. Then you also stated that previous to striking the dyke carbonic acid gas, or choke-damp, was given off? I mean by that, in the interval between the time when the mine first opened.
3253. Will you briefly explain to us again what is the true state of the case, because you led me to believe that there was no fire-damp in the Bulli mine previously to sttriking the dyke, and that the gas that did exist before that time was carbonic acid, which is non-explosive. Now you state in answer to Mr. Hilton, that a man was killed some years ago in the Bulli mine by an explosion? I have freely told you the exact circumstances, but will repeat more fully. For five or six years, perhaps, from the first beginning of the mine, gas was seen in various parts, both in the bords and headings, in moderate quantities. Where Twaddle was killed was in the south-west straight heading, on top of a large fault in the face of the heading. I do not know that gas was ever found in any quantity at Bulli after that for the term I have stated.
3254. Was it after that you noticed the carbonic acid gas come off? Yes, and after getting through the dyke we found carburetted hydrogen.
3255. Have you seen the results of any other explosions than this at Bulli? No, not of any magnitude, as I have stated.
3256. Then you have no knowledge to go by in judging of the effects of an explosion? I have no practical knowledge to judge of the effects of a terrible explosion.
3257. Therefore in stating that you think there must have been an extra accumulation of gas than what existed in No. 2 heading, you have nothing to guide you in forming that opinion? I have my practical knowledge, and reading, and judgment. I really think there was not sufficient space inside of the stenton for men to work with gas present in sufficient quantity to cause that explosion.
3258. Your idea is that there was an accumulation of gas somewhere else? Yes, I think so.
3259. Can you explain to me where it would be? I think it would be somewhere between the western and the Hill End.*
3260. And if you were told that there were very little signs of damage there? I should think it very strange, seeing that a horse was blown from the main heading into that return. [*Plan examined.*]
3261. Is it not likely that those boys and the horse were blown through this place by the force of the explosion from No. 2? I think they were blown from No. 2 right through there—the force would be on those bords off No. 2.
3262. Have you seen any signs of fire there? Yes.
3263. Any timber blown out? No.
3264. Then you think the explosion coming from No. 2, and which blew the stoppings out, was the same explosion that blew the bodies through here? I do.
3265. Then it would seem that there was no other gathering of gas beyond that point? There must have been in that return.
3266. Is it possible for gas to exist in a current of air measuring 12,000 cubic feet per minute? I think it is quite possible, supposing a quantity of gas to be accumulated.
3267. *President.*] The question is as to separation? I do not say it would separate. I think it is possible that before mixing with the current, a portion of it might be deposited in some convenient place being the lighter substance. [*The witness withdrew.*]

James Crawford sworn and examined:—

Mr. J. Crawford. 13 May, 1887.

3268. *President.*] What is your present occupation? I am a deputy at North Bulli Colliery.
3269. Were you for some time deputy at the Bulli Colliery? Yes, but not at the time of the explosion.
3270. You were there before the explosion? Yes.
3271. How long is it since you left? I left when the strike took place.
3272. Were you deputy of the Hill End section? Yes.
3273. Were you in that position before the dyke was pierced that gave off gas? Yes.
3274. Was there very much gas given off when you first touched the coal inside the dyke? At first, a small quantity came off; it was struck at night-time; two men, Richards and Gard, struck the coal, and they ran and reported to Mr. White that they had struck the coal on the other side of the dyke, and that the gas was coming out freely.
3275. Had you any experience in gas before you found it in Bulli? Yes.
3276. Where? Yorkshire and Scotland.
3277. Who arranged the workings, and laid off the headings and bords in the Hill End section? Mr. Ross and Mr. White laid out the headings.
3278. Were you consulted? No.
3279. Not at all? No.
3280. Up to the time of the strike, what was the amount of ventilating current that supplied that district? I could not possibly tell you.
3281. I mean just before the strike? Before the strike, there was 2,500 cubic feet of air going past the headings of the gassy section.
3282. Were you present when Mr. Rowan, the inspector, took his measurements? Yes, at one place.
3283. Was it you who arranged the doors between these headings and the main road? No, I had nothing to do with the doors.
3284. Were you instructed where to put them? No, White did that.

3285.

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* Note.—Plan examined, and witness indicates possible positions.

3285. From the time that Nos. 1 and 2 headings were broken off the main tunnel, had gas been given off up to the time you left? Yes.
3286. In a large quantity? Sometimes a large quantity, and sometimes a small, but they were never clear at any time.
3287. Where did it issue from? The centre of the coal.
3288. Was it more abundant in approaching rolls, or after the rolls had been crossed? I always found it largest in between the rolls.
3289. In approaching rolls, did you find any? Yes, all the way through.
3290. Did it come out in blowers? Yes, considerable quantities would come out from blowers, which you could hear 20 or 30 yards away.
3291. How long would they last? Sometimes from two to three weeks, and after the men had worked several yards past them, they would continue blowing out at the side.
3292. Was gas given off in the bords off No. 1 heading? Yes.
3293. Was it given off in the bords up to the time of the strike? Yes, up to the time of the strike; I know nothing afterwards.
3294. But you say it was given off in the bords? Yes, up to the time of the strike.
3295. In sufficient quantities to require the use of safety-lamps? Yes.
3296. They were used in the whole of that district? Yes, with the exception of two places.
3297. Where were these? In the first bords in No. 1 heading.
3298. Were these abandoned bords at the time of the accident? Yes.
3299. Were these safety-lamps locked? Yes, all the time I was there, with the exception of the time when we started using them; at that time, there were only four lamps for two shifts of four men each, and the day men had to give them up to those men working at night.
3300. Are you quite sure that these lamps were always locked afterwards? I am quite sure they were whilst I was there; I examined the lamps in the morning, and locked them, but of course I was not there at night.
3301. You locked them yourself? Yes.
3302. And you used all possible care for the safety of the men? Yes; all in my power.
3303. Did you ever hear of a safety-lamp being unlocked? Yes, at one time, owing to the scarcity of keys, two men were allowed to use their lamps unlocked; in giving them their lamps in the morning, I told them that the key was broken, but that I had given orders to White to get some more keys; I afterwards went into their working place, and caught them working with unscrewed lamps; I ordered them to screw on their lamps, and to go out of the pit, and report themselves to White.
3304. Did you ever receive complaints from the men on account of having unlocked lamps? I never had a complaint from any party.
3305. Did you ever have any complaints concerning unsafe lamps? Yes, on one occasion.
3306. When was that? A man gave me his lamp and said the top gauze was burnt out; I took his lamp to pieces, and found that one of the gauzes was gone, and I said I have not another to give you; the top gauze was perfectly sound; there are two gauzes, one takes off, and the other is a fixture.
3307. Did you consider that lamp safe? No.
3308. Did you allow that lamp to be used? No.
3309. And you thereby removed a source of danger? Yes.
3310. You considered that the man had done his duty, and that you had done yours? Yes.
3311. You are quite sure that you did not hand back the lamp to the man, and tell him that you had not another to give him? I am not aware of doing so; I know I told him that we had no wire to mend the lamp.
3312. Did you ask for wire? Yes, immediately afterwards.
3313. And they had to send to Sydney for it? Yes, there was none in the district.
3314. In your time, how were shots fired? During my shift, I fired all shots myself; I first examined the place to see if it were safe, and if I found it safe, I fired the shot.
3315. How did you light it? With touch-paper, which I would rub on my clothes, and light it by holding the lamp on one side. I find I have in my pocket a piece of touch-paper that I had when I left.
3316. Do you consider that a safe and proper way of lighting a shot? It is the only way we had; I kept a lamp for the purpose, and when I found the gauze of the lamp softening, I put a new one in; I have fired shots with a small wire, but I do not think it is as safe as the other.
3317. Do you know if any of the men fired shots? Not to my knowledge.
3318. Would this be as safe a means of firing as any other in the hands of any man? Yes, it would if a man properly understood what he was doing.
3319. But if he did not? Well he ought not to be there at all.
3320. How were the shots fired at night? I cannot say. I supplied the night men with touch-paper, and warned them to be very careful, and not to use a naked light whatever they did.
3321. You do not know how shots were fired at night? No.
3322. Were the lamps locked there at night? No; they were left to the men to do what they liked with them.
3323. There was no night deputy? No.
3324. Did you ever find any men unscrewing the lamps? I have already told you of two men doing so.
3325. That was some time ago? Yes; there were only a few men working in the gassy section at the time.
3326. You say that you exercised due care in cautioning the men? Yes. I would show them the gas oozing out of the coal, and gave them instructions to be careful.
3327. The ventilating current you say was 2,500 cubic feet per minute? That was the last report. The first report was between 3,000 and 4,000 cubic feet.
3328. If that current was trebled or quadrupled, would it render that part of the mine more safe? If it was carried into every working place I have no doubt it would.
3329. How did you ventilate the faces of Nos. 1 and 2 headings? There was a cut-through every 23 yards.
3330. Was any bratticing used? No; not to my knowledge.
3331. Did you think it necessary for the safe working of the bords off the headings? Yes, I did.
3332. Did you ever mention it to Mr. Ross? No; but I did to Mr. White.

Mr. J. Crawford. 13 May, 1887.

3333. Did you not consider it your duty to mention it to Mr. Ross, seeing that nothing resulted from your mentioning it to Mr. White? I did not think it my duty to pass Mr. White in anything.
3334. But in a matter of life and death, for the safety of yourself and others depended upon the mode of ventilation, do you mean to say that you would not approach Mr. Ross—was he such an unapproachable man? I thought it was Mr. White's duty to report the matter to Mr. Ross at once.
3335. But having no result from your appeal to Mr. White, don't you think it was your duty to go to the court of last appeal? No; not to pass my superior, and Mr. White was my superior.
3336. Now, do you think you did your duty? Yes.
3337. Was the gas at all times given off in Nos. 1 and 2 headings? Yes, at all times. It never ceased.
3338. Did you ever hear of men firing shots by means of matches in No. 2 heading? I did not.
3339. Would you be surprised to learn that it has been done? I am not at all surprised at it.
3340. But you never saw or heard of it? Never.
3341. When you found any quantity of gas in these headings, were you in the habit of reporting it? Yes, regularly to Mr. White on all occasions.
3342. Had you any book at the mine for entering these reports? I never had a scrap of paper at the mine for any report whatever.
3343. If you found a dangerous condition of affairs could you not have procured some paper and entered your protest, for you were in a responsible position? I exercised my duty, I thought, when I reported to Mr. White everything that happened every day, and when I saw a place dangerous for men to work in I removed them.
3344. Had you opportunities of conversing with Mr. Ross? Not many.
3345. Not during the time you were deputy over this fiery section? I had one occasion when he was in, and I then showed him the gas oozing out. A drill-hole had been bored in the wall side, in which I inserted a gaspipe, and I showed him the gas alight from this pipe to prove to him that it was not diminishing with 3,000 cubic feet of air passing.
3346. Had you any other object? I wanted to satisfy him that the gas was still strong.
3347. What did you follow that up with. Did you not say something to this effect—"Now, Mr. Ross, don't you think it is advisable to put bratticing in the headings"? I left that to him.
3348. No doubt, but is it the custom for deputies to do so? There is no doubt that it is.
3349. Had you no fear of any calamity happening from this gas which you showed to Mr. Ross? Yes, I had.
3350. Then why did you not warn Mr. Ross by suggesting some proper measures for the safe working of these headings. You say that in your opinion bratticing should have been used, and was not that the proper occasion to suggest its use to Mr. Ross. Had you not a good opportunity of doing so? I had, but I did not do so.
3351. Don't you think you failed in your duty? No; for Mr. White was present at the time.
3352. Why do you think it was not your place. You were the person who inserted the pipe into the blower for the purpose of showing the gas to him, and is it not a natural conclusion that you would say, "Now, Mr. Ross, don't you think this gas ought to be specially dealt with"? When I showed Mr. Ross this it was on the main road.
3353. But don't you think that you lost an opportunity of doing a great service to the colliery? If I had suggested such a thing I would have got a "snubby" answer.
3354. How do you know that you would when you did not tell him. You must see that that is not logical? I don't think that I violated my duty in any way, because I reported to White on all occasions.
3355. If you showed Mr. Ross that the gas was not diminishing in No. 2 heading, surely you had some intention in showing him that gas. What could be more natural, seeing that you believed that bratticing should be used, than for you to say, "Don't you think, Mr. Ross, that bratticing should be taken into these headings"? I was not paid for suggesting to Mr. Ross.
3356. Were you not paid for doing your duty? Yes; and I did it.
3357. You saw that valuable lives were imperilled, and you lost your opportunity? No; I lost no opportunity.
3358. You knew the mine better than Mr. Ross? Yes.
3359. You put yourself to some trouble to show him the gas, and if you thought he was wrong or sceptical about the quantity of gas, don't you think that you lamentably failed in your duty in not suggesting the remedy you believed in? No; I do not think I failed at all in my duty.
3360. You don't? No, I don't; I did my duty in showing the gas to Mr. Ross and Mr. White.
3361. Did you state to some man that you believed the colliery would blow up some day? I stated after the strike that if proper care was not taken the colliery would blow up, because I believed that Mr. Ross and White were not taking proper care.
3362. Was it on that account that you left? No; I left because my wages were reduced, and I was not paid sufficiently for my responsible charge.
3363. Did you state this danger to any of the officials higher than yourself? Yes; I told it to Mr. White the last time that we came out of the mine together. I said to him, "If this is a prolonged strike I will never enter this mine with a naked light." I said that because I thought that during the time the furnace would not be working regularly the gas would accumulate in the old workings. I have cautioned him many times about the existence of gas, and that he would insist upon men not working with naked lights.
3364. Where was that? In these places off No. 1 heading.
3365. You stated that they did not work with naked lights? Neither they did, with the exception of two bords.
3366. You expostulated with Mr. White upon the consequences? Yes.
3367. Yet you did not suggest any improvement in a mild way to Mr. Ross. He is an experienced man, is he not? Yes.
3368. Knowing what you do now, don't you think you failed in your duty? No; as I have said before, I do not think that I failed in my duty all.
3369. Were you in this district since the accident? Yes; I was.
3370. Were you one of those who went in for the purpose of recovering the bodies? Yes.
3371. Did you make an accurate examination of the seat of the explosion? Yes; I was in Nos. 1 and 2 headings.

3372.

3372. Did you go into the face of the bords off No. 1 heading? Yes; I went into two bords.
3373. Did you examine for gas? Yes; and I found none.
3374. Did you go to the faces of the bords off No. 2 heading? Yes; I went into four faces.
3375. Did you examine for gas in any of them? No; not carefully.
3376. Did you go into the faces of Nos. 1 and 2 headings? Yes.
3377. Did you examine for gas? Yes; and I found it there.
3378. Was the quantity as great as that when you were deputy there? Yes; the day before the strike took place I stopped a man named Gard from working in No. 1 heading He had a shot waiting to be fired, everything was ready, and his coal cut; but when I went into the place and examined the gas I said, "I will not fire this shot for you as this place is full of gas for 12 yards back." I then put two boards across each other, some distance back in the heading, and wrote the word "Danger" over them, and left the shot unfired, and put him to work in another place. When I went into the same place after the explosion I found there gas 10 yards in length, and 3 feet in thickness.
3379. Almost as much as when you left? Yes.
3380. After the explosion the ventilating current would be totally deranged? Yes.
3381. You are not surprised at that? No.
3382. It was a natural consequence? Yes; but I was somewhat surprised to find the ventilation so good after such an explosion.
3383. Were you surprised to find no gas in the bords? No.
3384. You stated before that up to the time of the strike the bords gave off gas? So they did.
3385. And yet you are not surprised that without the ventilating current no gas was found in them? I did not make a minute examination of these bords.
3386. How would you account for no gas being found in them after the accident? I did not say there was none.
3387. I suppose that you were informed that there was absolutely no gas in these bords, or none visible in the safety-lamps after the explosion. I presume that you mean that before the strike the gas would show itself in these bords in a Davy lamp? Yes.
3388. The general expression "no gas" means that it is not visible in the safety-lamp, does it not? Yes.
3389. Would you conclude that gas had ceased to be given off seeing that there was none found there after the accident when the ventilating current was very low? No; I would conclude that if the coal was once cut again the gas would come off again.
3390. We are informed that immediately after the explosion no gas came off in these bords? I believe if they were minutely examined, gas would be found in any of them.
3391. That is your opinion? Yes; I would not like to go into them with a naked light.
3392. But you do not charge the people who saw these bords with being less able to detect gas than yourself? No.
3393. Did you consider the mode of working Nos. 1 and 2 headings, with bords off each heading, safe? Yes, it was safe.
3394. No safer could be followed? No. The distance between the headings was about 10 yards, and the cut-throughs were put in nearly every chain, or a little more.
3395. After this explosion, can you suggest anything better? Nothing better, excepting bratticing the headings.
3396. In your time did Nos. 3, 4, 5, and 6 give off gas? Yes.
3397. In your time did you ever discover gas in any of the abandoned bords off No. 1 heading? No.
3398. There are two bords driven back to the dyke? Yes; but I never saw gas in them.
3399. Would that be a likely situation for gas? Yes, provided the ventilation were stopped altogether. Gas might have settled in there, as they were not properly stowed up.
3400. Was it a likely place? Yes; if there was no air going, it might accumulate there; but if the current was kept up, it would drive it away.
3401. What conclusion do you come to as to the cause of the accident? I examined No. 2 heading, and I saw that a shot had been fired there recently, and I consider that due care had not been taken in firing that shot.
3402. In what way was care not taken? So far as my knowledge would lead me to believe, I saw that the coal had been smashed down a good deal, and no hole had been cut underneath. If this is not done, the shot will more likely cause a blast, and I would think from the position of the bodies of the men who worked in that heading that the shot had ignited the gas.
3403. Have you ever seen a shot ignite gas in that district? No.
3404. Have you heard about it? Yes; but I have no proof of it.
3405. Do you think that it is an improbable event? No; but I have not seen it.
3406. Do you think that the shot was overcharged? Yes.
3407. It is not a blown-out shot? No; there is a good quantity of coal driven down, but I am inclined to think that the shot was slightly overcharged.
3408. In examining the gas issuing from these headings, did you notice whether it was of a very quick description? Yes.
3409. It would rapidly fill the safety-lamp? Yes.
3410. In other words, it was very pure gas? Yes, no doubt about it.
3411. Did you form any conclusion as to the course of the explosion? I believe there has been an accumulation of gas on the opposite side of the main tunnel in the old workings. I maintain that there has been an accumulation of gas there, and that the fire in No. 2 heading has reached it.
3412. You do not say that the shot did not ignite the gas in the heading? No.
3413. You are of opinion that it did? Yes, I am of that opinion.
3414. And in proceeding down both headings it ignited other gas on its way out? Yes, that is my opinion.
3415. Gaining force as it proceeded along? Yes.
3416. Have you any knowledge of how an atmosphere of coal-dust behaves in the presence of ignited gas? Undoubtedly it increases the intensity of the explosion.
3417. Was the Bulli colliery of a dusty character? Yes, it was dusty.
3418. During the working hours the dust would be mingled with the air more or less? Yes.

Mr. J. Crawford. 13 May, 1887.

3419. The gas having been exploded, the intensity would be increased? It would add a little to the fury of it; but I do not believe in the theory to any great extent.
3420. Would it intensify the action of the explosion? I have no reason to doubt that it would.
3421. *Mr. Neilson.*] You say that you always brushed the gas out before lighting a shot? I was always very particular in seeing that there was no gas in the face when I fired a shot.
3422. Where would the gas go? It would go out of the heading and into the air, but it might get into an old bord if it was in the way.
3423. Did you ever allow any oil to remain on the gauze of your lamp? I took good care that there was not any, and I took great care that no one used my lamp but myself.
3424. How long would you use the same gauze? Perhaps a week or more; but whenever I found it any way weak I renewed it, but I always took good care to keep a good one on for myself.
3425. You did not lock the lamps for the men at night? No, I was not there.
3426. These lamps were then unlocked? Yes; but I gave orders to the men to lock them themselves.
3427. Was the key left outside the cabin? Yes.
3428. Was it there in the daytime as well? Yes; but I was generally knocking about there during the day; it would be a pretty hard matter for a man to come there and unlock his lamp without my seeing him.
3429. It is now nearly eight weeks since the explosion, and would you be surprised to hear that there is no gas in the bords off No. 1 heading? I am not much surprised.
3430. Did you know Millwood? Yes.
3431. What sort of a man was he? A very good workman.
3432. How long did he work under you? I never considered he worked under me at any time.
3433. How long did you know him? Seven or eight years.
3434. Was he a steady man? Yes, a very steady man.
3435. And a good workman? Yes, good for what he had to do.
3436. And very intelligent? I cannot say that.
3437. Do you think he had a good knowledge of coal-mining? I do not.
3438. What reason have you for saying that? I thought the man was careless in detecting gas.
3439. In point of fact, have you ever seen him trying to detect gas, or have you shown him how to detect it? Yes, I have shown him on many occasions that gas was existing, when he would come in to the places to fix up a stopping or hang a door.
3440. He then had experience with you in the detection of gas? Yes; I kept it no secret from any man who wished to see it.
3441. You stated in your evidence that after the strike you prophesied that there would be a blow-up some day? I have stated before the strike that if due care was not taken with the gas, she would blow up some day, because Mr. White was not in my opinion going the right way about it.
3442. You considered that Mr. White was not competent to deal with it? Yes, I did.
3443. You knew of the danger that was existing, and you considered that Mr. White was incompetent, and yet you did not pass an incompetent man, and go to head quarters? I beg your pardon. Did I not say that I showed it to Mr. White and to Mr. Ross at the same time? Surely that was good enough?
3444. Was that doing your duty? I think so.
3445. How many times did you show it to Mr. Ross? Once.
3446. How often did Mr. White see it? Twice.
3447. Is that all? Yes, in my presence; but he has seen it hundreds of times by himself.
3448. And you saw it hundreds of times yourself? Yes.
3449. And you considered White incompetent? Yes; I have already said that.
3450. And you allowed an incompetent man to stand between you and the manager? I showed the gas to the manager in presence of his overman.
3451. I do not suppose there was a good feeling between you and the other officers at the pit after the strike? I never had any disagreement during the strike.
3452 Is it a fact that you have lately stated that you intended to make it hot for Mr. Ross and the Company, when you were called before the Commissioners? I have never said such a thing, and Mr. Ross and myself were always good friends.
3453. And yet you would not pass Mr. White to show him a danger? Yes; I passed him on the occasion that I showed it to the manager in the presence of White. The manager knew of it, and what is more, he knew White had been delegate for years.
3454. *Mr. Hilton.*] Did you consider it White's duty to report all matters to Mr. Ross? Undoubtedly.
3455. Have you read these general rules for the working of collieries? Yes.
3456. Do you find anything in these rules that requires you to go beyond the overman? No; I do not see anything.
Mr. Hilton.] Nor do I.
3457. *Mr. Owens.*] How long after the explosion did you enter the mine? The night afterwards.
3458. Did you notice that big fall on the engine plane? No, I did not go that way; I went the slacky way.
3459. Did you notice the stoppings blown out in No. 1 heading? Yes; but I did not go around them.
3460. Did you notice the first stopping? I did not pay particular notice; as I did not go in for the purpose of taking particular notice of everything.
3461. Did you know these stoppings [*Marking places on the plan*]? Yes; I think they were blown out, but I am not sure.
3462. What bords do you refer to when you speak of where an accumulation of gas might take place? In the old workings on the west side of the dyke. [*Places marked.*]
3463. You stated that your attention was once drawn to a safety-lamp with a burnt top? Yes.
3464. Are you sure that that lamp was not again used in the mine? I am positively sure that it was not.
3465. To whom did you give the lamp? I cannot positively recollect whether it was Beckton or his mate. We had only four lamps, and Mr. Ross had to send to Wallsend to get some more lamps. I believe we got half a dozen more afterwards, and when these lamps came I took out the old gauze on some of these lamps, and I recollect putting a new gauze in the top of this particular lamp.
3466. After danger had been reported you remedied it? Yes, as far as lay in my power.
3467. Did you ever notice any gas in the western district? Never.

3468. Did you ever notice it in any other part of the Hill End district? I have heard that it was seen ten or twelve years ago, but I was not there.
3469. Was it common for the gas to accumulate in any of these bords off Nos. 1 and 2 headings before the strike? I never saw any accumulated, but it came off at the working faces, and what I say is that if the furnace was slack at any time during the strike, the gas would get into the old workings because there was a great amount given off.
3470. Do you consider you did your duty in reporting to Mr. White? Yes; according to the colliery rules he was my superior.
3471. It was his duty to report to Mr. Ross? Yes.
3472. And if he did not do that? Well, I reckon I was clear.
3473. *Mr. Hilton.*] What reason had you for thinking that Mr. White was incompetent? On one occasion when I sent those two men out for having unscrewed their lamps he sent them back immediately and I had to find them other places. I found one of the men a place in No. 1 heading. There was no gas in there at that time. I asked Mr. White some days afterwards what Mr. Ross had said about the men, and he said he had never reported it to Mr. Ross.
3474. *President.*] That is some time ago? Yes.
3475. When you were opening out the district? Yes.
3476. *Mr. Jones.*] Do you know if Mr. White reproved those men for neglect of duty? I do not know.
3477. He merely sent them back again? Yes.
3478. There has been a great deal of stress laid on the matter of reporting to officials. Does not this rule 3 prescribe your duty. Read it and see? Yes; I reported to the overman.
3479. And there your duty ended? Yes.
3480. Do you think it is an evidence of good management not to provide a system of reporting by which the report of each and every official would reach the head manager? If there was a book kept at the mine for entering these reports, the manager would see everything, but in the absence of that he would not.
3481. Do you think it is also a good system for each officer to send in his own report? Yes; either to do that or to enter it in the ordinary report book.
3482. Of course I am aware that in many of our large collieries and in some small ones as well, each official sends in a distinct report of his own. Don't you think that that would be a much better system? I do not see there is much difference if you had a report book in which these daily reports could be entered.
3483. But you believe a system of reporting in writing would be much better? Yes.
3484. Than the systemless system pursued at Bulli? Yes; and if it had been carried out there would have been no call for this inquiry.
3485. Was it any part of your duty to suggest the adoption of such a system? It was no part of my duty.
3486. You think you would be told to mind your own business? I have very little doubt about it.
3487. *President.*] I am sure you would not.
3488. *Mr. Owen.*] During your time were the roads from the Hill End to the western, and from the western to the grip in a travellable state? Yes; I was on the western road almost every day, so I can say positively that there was no accumulation of gas there then, for there was a good travelling road.
3489. You have already been asked as to your opinion of the competency of the late deputy—do you think it was a prudent matter on his part to allow men to work with open safety-lamps? No; I think it was a great neglect of duty and a violation of the rules.
3490. *Mr. Clarke.*] When you showed Mr. Ross this pipe fixed in a blower of gas, what was the conversation that took place—what did you say to him? I showed the gas to him in that way so that he could see that it was not diminishing, and his reply was to be careful.
3491. Is that all? That was all.
3492. Were no steps taken? None.
3493. *Mr. Croudace.*] During the time you were deputy did you examine the various working places previous to the men commencing work? Yes, every morning.
3494. Was that in compliance with any special instructions? It was in compliance with a rule.
3495. Rule 4:—"No workmen or boys shall enter any working place until it has been examined by the overman, or other person duly appointed, whose duty it is to make such examination before work is commenced." Is that the rule you refer to? Yes.
3496. And you complied with that rule? Yes, in all instances.
3497. Did you consider these places in your time properly ventilated? The places were very well ventilated, that is when the headings were not driven too far from the cut-throughs.
3498. Is there any difference between the system of ventilation which you have seen after the strike, than before? No alteration that I could see.
3499. None at all? None at all.
3500. Now I will read the rule a little way further on:—"If on examination any working place is found insecure from a defect in ventilation, or from insufficiency of props or timber, work shall not be commenced there until the insecurity is remedied. And if in the course of being worked any place prove insecure from any of the causes above mentioned, the overman, or other person appointed, shall, if he think necessary, stop the workmen there and remove the workmen. Immediately upon doing so he shall cause a danger signal or 'danger cross' to be erected across the entrance to the place, beyond which no person shall go on any pretext whatever, unless duly authorized so to do." Did you comply with that part of the rule? Yes.
3501. But would not the proper ventilation of these headings have consisted in carrying bratticing into the faces? Yes; no doubt that would have been the proper way.
3502. Knowing that, why did you not suggest to the overman, or to Mr. Ross, your way of improving the ventilation in the faces, or why did you not actually carry it out? When I went beyond their instructions I had to leave.
3503. You actually carried out a certain portion of No. 4 rule in examining every working place every morning, and there you seem to have stopped. Why not insist upon carrying out this better system of ventilation; you have full power, and you would not be amenable to any consequences that might arise? I cannot say that. When I gave my report to the overman it was his duty to attend to it.

Mr. J. Crawford. 13 May, 1887.

3504. No. 4 rule also distinctly says:—"No workman or boy shall, unless duly authorized, go into any part of the mine, excepting that to which he is appointed by the overman or other officers." Did you carry that out? Yes, I carried that out also.
3505. And it also says:—"And until such examination shall be made and leave given, no workman or boy shall go beyond the flat, or other station appointed by the overman." Did you carry that out, too? Yes, I did, and I saw that all the places were properly ventilated then.
3506. Are all the places properly ventilated now? The headings are driven further past the cut-throughs than when I was there.
3507. But there is no difference in the system of ventilation? I did not notice any.
3508. You say that you told Mr. White that if he was not careful the pit would blow up some day? Yes; that was just about the time of the strike.
3509. But would not that state of affairs implicate you as well as any one else? I was leaving the service of the Company. I told him the last day before the strike took place.
3510. But supposing an accident happened before the strike, and it was found that the mine was not properly ventilated? It was properly ventilated.
3511. Have you not said that bratticing would have been a better system? Yes; but before I left, the places were safe.
3512. Are they less safe now? Yes; the bords and headings are driven further in advance of the air, that is the only difference.
3513. What was the distance between the stentons when you were there? They were about a chain apart.
3514. But did you not drive the last stenton that has been put between these headings? I could not say.
3515. How many stentons did you put through between these headings? I should say about seven.
3516. You admit you have put seven stentons between Nos. 1 and 2 headings? I am not sure.
3517. Shall I say six, will that please you? No, it will not, that might be one less.
3518. Now look at the plan and see what becomes of your statement that you drove the stentons more frequently than they have been driven since? I did not say that exactly; I said these places were driven further in advance of the air, and if you understood the rules of these headings you would find that Mr. Ross' instructions were to get the cross-cuts in coal as much as possible, and not over rolls.
3519. I want to know exactly what you said to White. You state that on one occasion when Mr. White was there, that you told him there would be a blow-up in this mine. I want to know what justification you had for such a statement. You say you left the places safe, and you see that you drove the last stenton? What I did was to drive the stentons as near as I could at every 22 yards.
2520. But does not the plan prove to you that the stentons in these headings, from beginning to end, are driven most irregularly? They were driven according to orders, and if you examine that plan you will see rolls coming down 18 inches from the roof, and extending perhaps 10 or 12 yards in length, these would interfere with the driving of the stentons.
3521. But you led me to believe that you drove the stentons every 22 yards until I show you that they are driven most irregularly, and that not one stenton has been driven since you left the colliery; what then becomes of your statement that you considered the system of ventilation was not so good after you left? My statement was this, that I warned Mr. White to be careful owing to the quantity of gas that was coming off.
3522. If the furnace was stopped for a few days during the strike, I would like to know where all this gas would go—could it go to the furnace, would it go outside, or would it stop there? I say it would get into the old workings. I also say that my idea was that these bords and headings were driven further in advance of the air than when I was there. I would like to know how long did men work in these bords during the strike.
3523. Was there any alteration or likely to be any alteration in the manner of working, which would cause you to believe that there would be some dreadful explosion after your time? I did not see any great alteration after the explosion.
3524. Are you aware that the ventilation was better after the explosion than when you left? If the stoppings were well built up there ought to be four times more.
3525. Have you any reason to think that the manner of building the stoppings has been altered? I do not know.
3526. Have you any reason to believe so? I have no reason to believe that they were altered in any way.
3527. Then with the new furnace giving a largely increased current, the probability is that the whole ventilating system was improved? Yes.
3528. In your time was there a door in the western junction? Yes.
3529. Was it a regulating door? Yes.
3530. Had it a slide? No.
3531. Was it a swing door? What do you call a door with hinges?
3532. *Mr. Croudace.*] I call that a swinging door. *Witness:* So do I.
3533. You stated that you told the overman that if he was not careful there would be a terrible explosion? I did say something of that kind, and I have never denied saying so.
3534. If you can prove to me that there has been any alteration in the stoppings, or any decrease in the quantity of air supplied to these headings, I will give you all credit; but if you cannot, it will be the reverse. You have admitted that there has been no alteration in the ventilating system as far as these headings themselves were concerned, and you have also said that there was a large increase in the quantity of air going in after the explosion. I will now ask you if there has been any alteration in the ventilating doors? I cannot tell you; I can only tell you what there was there, when I was there.
3535. Well, was there a door at the western? Yes; a swinging door.
3536. Was it kept open or shut? It was kept open as a rule, but the engine set of 20 skips had to come through there, and it had to be opened on many occasions every ten or twelve minutes to let the set through. There was no air allowed to pass when it was open, and when the door was shut there was a small hole in it to allow the wire rope to work, and on the right hand wall there was a hole 18 inches wide.
3537. Now, between Nos. 1 and 2 headings, was there a door there? Yes.
3538. Was it a closed door? Yes.
3539. Was a trapper kept there? Yes.
3540. Was it a double door? No; there was only one door.

Mr. J. Crawford.
13 May, 1887.

3541. Proceeding from there to the diagonal cut-through, was there a door there? Yes.
3542. A closed door? Yes.
3543. Was it a double door? No; only one door.
3544. Between Nos. 3 and 4 headings, was there a door there? Yes.
3545. Was it a closed door? Yes; it was a swinging door.
3546. Was there a trapper kept there? No; this used to be the flat, but a day or two before the explosion they finished it and pulled the coal from here [*place pointed out on plan*].
3547. When you went down after the explosion did you look for this door? Yes.
3548. What did you find? I saw a sheet of canvas had been put up there.
3549. But did you not find the door? No.
3550. Where was it? I don't know; and I saw nothing there but a sheet of canvas.
3551. Did you see the No. 3 door? No.
3552. We have evidence that after the strike these doors were in existence as well as the western door, and that three of the doors were kept by trappers, and that the other was attended to by the man at the flat. Did the same state of things exist in your time? Yes.
3553. Then there is no alteration in the system of ventilation as far as the doors are concerned? No alteration.
3554. You stated that you believe that there could not have been sufficient gas in No. 2 heading to cause the effects of this explosion, and that there must have been some gathering of gas in these old workings west of the whin dyke? Yes.
3555. Do you think that she fired anywhere this side of the dyke? I could not tell you.
3556. Did you examine any of these old workings? No.
3557. Did you examine any of the workings in the western district? Yes; but not in the return.
3558. Did you see any sign of fire or of the force of the explosion? I saw a few slight indications of burning.
3559. Did you see the door at all? Yes.
3560. Were there any signs of burning on it? The door was not charred.
3561. Did you not think that if the explosion had gathered intensity by lighting gas in the old workings, you would have seen greater signs of fire in the western district? I did not go into the return; but if you go there you will see that the road is in a very ragged condition.
3562. But do you not think that if the explosion had gathered gas as it went along, that you would have seen greater signs of fire down here? I saw signs of fire, but of no great fire.
3563. I ask you still further—In getting into these old workings is there a continuous opening, or is the overcast carried right away through to the furnace? Yes.
3564. But are there many openings opposite the road? Yes.
3565. I ask you as a fair and good deputy, is there any chance of gas accumulating when the air is regularly sweeping to the furnace? Yes; in some of these places on the right and on the left, falls have taken place, and both roads are very ragged, and if this is the case is it not possible for the gas to leave the working faces and to pass into these old workings.
3566. Not with the current of air that is reported to have been passing. You know that Nos. 1, 2, 3, 4, 5, and 6 headings all produce gas; but did you ever hear of any gas lighting at the furnace? No.
3567. Did you ever hear any man say that he had seen gas in the western district at any time? No; but one morning there were some men working contiguous to the dyke, and when they fired a shot it lighted a small quantity of gas right in the dyke. That is the first gas I saw ignited in that locality.
3568. Do you know of your own knowledge that the new furnace has been working since the strike, and was the new air shaft sunk in your time? It was being sunk.
3569. But it is now complete? Yes.
3570. Have you heard of any large improvement in the ventilation from that new furnace? I saw the new furnace the last night I was in the pit. I went in with a friend, and I could see that it was a grand furnace, capable of ventilating over ten times the ordinary amount, if the other ventilating arrangements were properly constructed.
3571. Have you heard that there was a current of air passing amounting to 12,000 cubic feet per minute? Yes, that was a great improvement upon 2,500 feet, which I believe was Mr. Rowan's last report before the strike.
3572. You have stated that you handed a man a broken safety-lamp at one time? No, the man handed the lamp back to me.
3573. Was that man Albert Smithers? I could not positively swear.
3574. Did you ever give any person a broken safety-lamp? I never did to my knowledge.
3575. Will you swear that you did not on a certain day or night give a miner a broken safety-lamp? I swear now that I did not do so to my knowledge.
3576. *President.*] We are now speaking of a witness who swore that you gave him a broken lamp, and that you said it was the only one available? I gave no man a broken safety-lamp.
3577. Consider the circumstances. The man who made this statement explained it in this way: They were asked whether they had ever complained as to the condition of the gauze of the safety-lamp, and I think two witnesses said, "Certainly": one witness, I know, said that on one occasion he handed Mr. Crawford a safety-lamp, the top gauze of which was burnt through, and that you handed the lamp back and said you could not get any gauze? I never did such a thing as that.
3578. *Mr. Croudace.*] You have told us that very strict and proper care was taken by you in dealing with all safety-lamps, and that they were all locked during the day shifts, and that you locked them yourself. Did you know that the night lamps were not locked? I had no reason to believe that they were not.
3579. How was it that this carefulness became lax at night time? I don't know. I was only a servant and not an employer of labour. That was Mr. White's duty.
3580. I disagree with you there. Did you not consider that the lives of the men working on the night shift were as valuable to them and to their families as the lives of the men working in the day-time? Undoubtedly they were.
3581. Would it not have been a prudent thing for you to insist upon these lamps being locked at night as well as in the day-time? I insisted as far as lay in my power, and Mr. White was fully aware that the night men using safety-lamps were left to their own free will.

Mr. J. Crawford. 13 May, 1887.

3582. To my mind you do not free yourself from all responsibility in trying to throw it on to Mr. White. You admit the performance of a portion of No. 3 rule, and then you failed in carrying out another portion of it? When 4 o'clock in the afternoon came my shift was done, and I had no further control over anybody.
3583. I am astonished that so competent an officer as you appear to be in many respects did not realise fully the extent of the duties which were yours? I did my duty, and I left my superior to carry out his.
3584. You stated that you believe you would have been snubbed if you had gone past Mr. White and reported these dangerous state of things to Mr. Ross? I have no hesitation in saying so, because I would then be going beyond Mr. White's authority.
3585. What sort of man do you consider Mr. Ross? A nice man, but a man of very few words.
3586. But are these words angry words or pleasant ones? Sometimes one, sometimes the other; it all depends.
3587. Did he ever on any occasion when you met him find fault with you, or censure you, or quarrel in any shape with you? I took good care not to do anything that would give him cause.
3588. Do you remember ever having any words with him which would give you the slightest reason for saying he would have snubbed you for reporting to him a dangerous state of things—anything to justify you in thinking so? Yes.
3589. Then tell it to me? Very often he would give me very short answers.
3590. Was there ever any occasion on which this nice man with very few words gave you any justification for thinking that he would have snubbed you if you had brought these important matters directly under his notice? I will not lay any charge against Mr. Ross.
3591. Is there anything that you can remember Mr. Ross doing that would justify or warrant you in making this statement? [*Question unanswered.*]
3592. *Mr. Jones.*] Was Mr. Ross aware that the men worked with unlocked safety-lamps at night? So far as I know he was; if he was not White should have reported this information to him.
3593. I suppose he knew that there was one in charge of the mine at night-time? He knew perfectly well. [*The witness withdrew.*]

John Barnes Nicholson sworn and examined:—

Mr. J. B. Nicholson. 13 May, 1887.

3594. *Mr. Clarke.*] You are a miner? Yes.
3595. And you reside at Bulli? Yes.
3596. Have you worked in the Bulli mine? Yes.
3597. Was that before the strike? Yes.
3598. How long did you work there? Nearly four years.
3599. Where did you work? In the Hill End, in the western, and in the grip.
3600. Where, just before the strike? In the grip.
3601. How long before that was it that you worked in the Hill End district? A little over two years ago.
3602. And you did not work in the mine at all after the strike? No.
3603. You remember the explosion? I do.
3604. Did you enter the mine after the explosion? No, not the day after the explosion. I was up at the pit and offered my services, but they were not accepted.
3605. Were they refused? I asked the overman if I should go in, and he turned round and did not say anything.
3606. He gave you no encouragement? No.
3607. But you went in on the Monday following? Yes.
3608. What time was it? About half-past 2.
3609. Who were with you? Messrs. Ross (senior), Ross (junior), Gardiner, Evans, Inspector Owen, and two other miners, Doyle and Greenhalgh.
3610. For what purpose did you go into the mine? To make an inspection on behalf of the miners.
3611. You and the two other miners were appointed for that purpose? Yes, at a meeting of miners.
3612. And you made the inspection? Yes, a slight one.
3613. Where did you go? First into the furnace, and from there into the gassy section.
3614. Did you notice anything at the furnace that attracted your attention? Nothing; we simply tested the air and came back. We went to the bank head, and from there to the gassy section.
3615. What part of it did you examine? We first went into No. 1 heading, and from there into No. 2. We found a considerable body of gas in No. 2 heading.
3616. Did you make any examination of the bords off No. 1 heading? Yes; two at the mouth of the heading, and one old bord, and two bords that were working.
3617. Did you test for gas in them? No, I did not; I only went down to the face of one of the bords where the last body in the pit was found.
3618. Did you go to the face of No. 1 heading? Yes.
3619. Did you find any gas? Not at that time.
3620. Did you go into the face of No. 2 heading? Yes.
3621. Did you find any gas there? Yes. Mr. Evans said that the gas was back 22 yards from the face of the heading, and that it was not safe to go in with the lamp.
3622. Did you go in? I set my lamp down and went in without a lamp.
3623. What was the appearance of the face? I could not see.
3624. Did you notice the destruction in the mine at this time? We did not take particular notice of everything, but we noticed the extent of the destruction. In these headings the roof is very good, and there was not much timber to be knocked about.
3625. Did you make a particular inspection of the heading? As well as I could by feeling over the face. By feeling the coal in the face I thought a shot had been fired there. The gas was very strong; it was down from the roof to the top of the coal; I could feel it while I was in there, especially when right up to the face.

3626. Did you examine the bords off No. 2? No, not particularly.
3627. Did you see any wreckage in No. 2? No; there is a good roof in there, and nothing to fall.
3628. Did you notice anything particular anywhere else? We went into No. 3 and found no gas there, and in one working place we found the stenton was 41 yards from the face.
3629. Did you find any gas? Not at that time.
3630. Did you examine any other heading about there? We went into No. 4 and into the straight which I believe they call No. 5, but we did not find any gas in either of them.
3631. Was there much wreckage or destruction? Hardly any.
3632. Did you make any other visit to the mine afterwards? Not until the inquiry was being held at Bulli. I then went in with the jury.
3633. From what you saw did you form any idea as to the origin of the explosion? That is very difficult to determine. I should almost fancy that it came from the straight, or in the old workings, from the position in which many of the bodies were described to me.
3634. From what you know of the mine since the strike, have you heard anyone remark that there was a large accumulation of gas there? I heard several men mention it; one in particular. It was Jerry Westwood.
3635. Where did he work? In No. 2 heading.
3636. What did he say? He told me that night, at Bulli—I think it was the Friday night week before the explosion—that they had struck a heavy blower that day in the heading, which was giving off gas all day.
3637. What did he say? He remarked it was a very heavy blower, and said they could hear it whistling 100 yards away.
3638. Did you make any remark? I asked him if there were any men working round about him with naked lights, and he said there were. I said, "God help you; one of these days you will get it."
3639. Were you secretary of the Miners' Union at that time? I was.
3640. Having heard of that enormous escape of gas did you take any action? I did not.
3641. Did you not bring it under the notice of the Association? I did not.
3642. Did you consider it your duty to do so? I did not.
3643. Why? I believe the management were thoroughly aware of it at the time.
3644. Did you believe what Westwood told you? Was he a truthful man—I had no reason to doubt his word.
3645. A blower giving out such an enormous quantity of gas would be a very dangerous element, would it not? Yes, undoubtedly it would be if there was not a sufficient quantity of ventilation to carry it away.
3646. Did you know that the men were working in its vicinity with naked lights? I was told that that was the case.
3647. That would be another element of danger, would it not? Yes; particularly those on the return side.
3648. And it was imperilling lives of all working there? It would depend on the quantity of gas coming off.
3649. A blower that could be heard a 100 yards away must have given off a considerable quantity of gas, was that not in itself a danger? It might be dangerous to the parties working there, but I do not believe it would be to the other portions of the pit.
3650. Holding the responsible position you do, and being the leader of others, did you not think it was your duty to take steps to avert such an evil as that? I did not think I had any right whatever.
3651. Not from a motive of humanity? It was purely a matter of business.
3652. I am asking you to take it from a human point of view. You knew that numbers of lives were being held as by a thread, did you not think it your duty, as a responsible officer, to bring that state of things under the attention of the management or Union? With regard to our own Union, I believe that every man in the Union knew it. I also knew that the manager knew it, and if I thought that any communication from me would have altered it, I should have been very glad to have made it, I can assure you; but I had every reason to believe that every man in the pit knew of it, for it was a matter of common conversation.
3653. But no steps were taken to avert it? Every man was afraid to do anything, for fear of losing his work.
3654. Why? Because of the rules that were signed after the strike.
3655. They were deterred by these rules from making reports? That is what I mean.
3656. I suppose you refer more particularly to rule 6 having reference to interference by employees? I refer to rules 3, 6, and 13.
3657. Rule 6—"Interference by employees—any employee interfering in any way with the colliery manager, or his overman, for regulating the work of the mine, shall be liable to dismissal without notice." That is the one? Yes.
3658. And the interpretation generally put upon this rule was, that if they reported any danger they would be dismissed? Yes.
3659. Was this matter ever discussed at the Union? All of the rules have been discussed and condemned *in toto*. A resolution was passed to the effect that none of us could work under them.
3660. What interpretation was put upon rule No. 6? That I have already given, that it would involve the loss of a man's work if he reported anything whatever.
3661. And that is your present interpretation? It is.
3662. How do you come to that conclusion? Because it is stated also from the fact, that I mentioned it to Mr. Hamilton and Mr. Ross, who told me that the rule could not be altered.
3663. Well, let us clearly examine the rule, and read it carefully. It says—"Any employee interfering in any way with the orders issued by the colliery manager, or his overman, for regulating the work of the mine, shall be liable to dismissal without notice." How can you interpret a complaint, or reporting the presence of a great danger, as an interference with the workings of the mine? Yes, easily; if I had been working and pointed out that a cross-cut should be put through to avert danger. That would be pointing out danger, but it would be an interference with the duties of the overman or manager, and he would tell me to go about my own business, as he has done.
3664. When was this—before the strike? Yes.

Mr. J. B. Nicholson. 13 May, 1887.

3665. What did you do? I pointed out that it was unsafe for the boys to wheel the tubs from a particular part of the mine where I was working, and I was told to mind my own business, and that I had nothing whatever to do with it.
3666. Was that the only occasion? Yes.
3667. Does that rule convey that interpretation to your mind? Strictly speaking it does, for making complaints would be an interference with the duties of others.
3668. Would the reporting of a great danger be an interference with the orders of the management? Decidedly.
3669. Would a great danger be any part of the orders of the management? If I pointed out something that required a remedy, would not that be interfering with orders.
3670. No. Would you be interfering with the orders of the management in reporting the presence of gas? In a manner of speaking it would be. If Westwood had said that there was such a blower in existence, and that it would be necessary to put in some bratticing, that would be interference, and would be a contravention of these rules, and would have rendered him liable to dismissal.
3671. So you think that the management of the mine is of such a character, that a great danger being pointed out the man so reporting would be dismissed? I did not say that—what I said was, that a man would render himself liable to dismissal.
3672. Did you think that there was the slightest likelihood of a man being dismissed for reporting danger? I could not say.
3673. Did you ever hear of a man being dismissed for reporting a great danger? I have never really known a great danger existing there, so of course I cannot reply to that question. The only time I had occasion to point out danger I did so, and I have given you the reply I got.
3674. But you never took any steps to report this great blower of gas to the management? I did not.
3675. Did you hear whether the gas accumulated there in any great quantities up to the time of the explosion? No; I did not.
3676. Although it was well known to the members of the Union, they took no action? Not that I am aware of.
3677. Did it ever occur to you to appoint two miners, inspectors, under the 30th clause of the Act? It has occurred to me, but it was never done.
3678. For what reason? The best in the world.
3679. Did the miners themselves appoint two of their number to make periodical inspections, which they had a right to do, and which right could not be refused? The miners who did this work would want to be paid for it, and unless it was taken up by some organization of labour there would be no means of payment.
3680. The reason the Union would not undertake the responsibility was that the management would dismiss the inspectors—is that it? Not that exactly. Something like a year ago I notified to all the managements in the district that we requested a conference to arrange certain matters for the more satisfactory working of the different collieries. They refused to grant us a conference on every occasion, except one manager; that was Mr. McCabe, of Mount Keira Colliery; so we could not get arrangements made for the appointment of miners' inspectors.
3681. But it was not necessary for you to have a conference to do that? I think it was.
3682. Do you think the management would have prevented you? I did not say that.
3683. However, it was not done? No.
3684. When the mine was in a dangerous state you said to one of the men working there "God help you one of these days?" That was only a few days previous to the explosion, and it was the general idea that the new furnace had improved the ventilation.
3685. When you made this remark—that there would be an explosion, or something tantamount to it——was the new furnace going then? Yes, I suppose so; it was supposed to be going; I am not sure that it was.
3686. However, after making that remark, you took no steps to have a miners' inspection made? I brought the matter twice before meetings of miners, and nothing was done; as a matter of fact, men were so cowed down that they dared do nothing.
3687. Was that before the blower? Yes.
3688. The inspectors were never appointed? Never.
3689. *Mr. Neilson.*] You were appointed by the miners of Bulli to make a complete examination of the mine after the accident? Yes, with two others.
3690. To ascertain the cause of the explosion? Yes, for that purpose.
3691. What were your special instructions at the meeting? I do not think any resolutions were passed, but we were appointed to look through the mine and see if we could trace the cause of the explosion.
3692. I think you said you went down to make a special examination? Yes.
3693. How many places did you examine? Five headings, and two or three bords in the gassy section.
3694. How many bords are there in the gassy section? I could not tell you, never having worked there since they were opened out.
3695. You went down specially to make an examination to find out the seat and cause of the accident, and you only examined two or three bords in the Hill End section? I did not say that we only examined two or three bords, but there was nothing very special in the bords; I went more especially to find out how far the stentons were back from the headings.
3696. In point of fact then, you were sent to make a special examination of a trifling little matter, and not to see the cause of the accident? We knew the cause of the accident, and we could not get round as well as we wished, and there was no one to show us from the Hill End through to the western district. Mr. Ross could not find his way through, and I could not, never having been there before.
3697. Did you examine the props? Yes, several; one especially at the end of the stenton in No. 1 heading.
3698. Was that the inmost stenton? Yes, close to the end of No. 1 heading.
3699. Did you examine any props in No. 2 heading? I cannot say that we did examine any of them very specially, but in No. 1 we saw one charred $\frac{3}{8}$ of an inch deep.
3700. Do you call that a special examination? Yes, but we were chased round as if we were going on a walking-match.

3701. You considered it of more importance to go round and examine these places than making any attempt to find out the seat of the accident? The seat of the accident seemed to be generally understood. At any rate, a good number of men were under the impression that it occurred in No. 2 heading.
3702. In point of fact, you had no business down the pit? Perhaps so, but the miners thought I had, or they would not have asked me to go.
3703. Did any of the miners report to the management when they heard of the dangers existing; you say it was a matter of general conversation, and you were so impressed with the danger that you exclaimed "God help you; one of these days you'll get it;" did any of this general conversation reach the ears of the management? I cannot say whether they reported it to Mr. Ross or not; I am not aware of it if they did.
3704. You are perfectly aware that you have full power to appoint two check-inspectors? I did not have full power myself; the miners have power, providing they had the means of paying for the work.
3705. But the management could not possibly stop you from doing that? I brought the subject under the notice of the men at several meetings, but the inspectors were never appointed. I do not know, but suppose it was because there was no means of paying them for the time they would be away from their work.
3706. What did you report to the miners when you made the special inspection of the mine? Several of the most important facts in connection with it. We reported that we found a number of props charred, and that we found a bord driven much beyond the distance required by the Act; that the bord was in No. 3 heading, and that it was 41 yards beyond the stenton, and that we could not get through the return from the "gassy" section into the western, and consequently that we had to come out by the main road. When we reached the junction of the western road, I asked if it would not be better to postpone the inspection until next day, but they said we had better finish it that day, as the horses were smelling very badly, and that it would be easier to finish it then than to come in again next day.
3707. Were the miners satisfied with the inspection? No, they were not.
3708. You only examined a few bords? We examined a number of bords when we got into the western.
3709. You only examined three in the Hill End district? I believe only three.
3710. *Mr. Hilton.*] You have just stated that you could not travel the return from the "gassy" to the western—was it from the "gassy" to the western, or from the western to the furnace? It was from the gassy to the western. We went a certain distance, but owing to a fall of rock, the road was partially blocked. However, Mr. Ross could not find his way through.
3711. *Mr. Owens.*] You were outside when the bodies were coming out? I was there the greater part of the time.
3712. And you viewed the bodies? Yes, a good many of them.
3713. Did you notice signs of burning on them or not? I did, and I saw that a good many of them were badly burnt.
3714. And were several of them not burnt at all? Yes, I believe so. There were several that I only examined about the head and face, and on a good many of them I saw no traces of burning on these parts; but a large number of them had traces of burning on their faces.
3715. When you went into the mine, the fifth day after the explosion, which way did you go? We went by the main incline first.
3716. Did you go over the big fall? As we came back we went over the big fall, and up to the Hill End district. We did not go over the big fall in the main tunnel.
3717. When you were near it did you smell any powder or dynamite smoke? Not the slightest.
3718. You say you only examined three bords in the Hill End district? I believe so.
3719. Did you try for gas in any of these places? We tried the faces of one of the bords, but found no gas. No gas was supposed to be in any of these bords; and while we were there I was told by Inspector Owen and Mr. Evans that there was no gas in any of them.
3720. Before the strike where did you work? In the grip, close to the return air-course.
3721. Have you worked in the Hill End district? Yes, but not since the gas was struck.
3722. Can you vouch for the statement that the miners never attempted to appoint check-inspectors? There was a resolution passed by the district to the effect that we were justified in making use of the Coal Mines Regulation Act wherever it would benefit us. Three times I communicated with the Bulli miners on this subject, but it was never acted upon.
3723. Did Mr. Ross ever object to it? Not to my knowledge.
3724. You have given us your interpretation of No. 6 rule; are you aware that the majority of the miners so interpreted it to mean that if they reported danger they would fall out with the management? Yes, that was the unanimous feeling.
3725. Was this interpretation put to any meeting of the men? These rules were all condemned by the men, and I pointed out the matter to Mr. Hamilton.
3726. I mean this 6th clause? The men thought it would mean dismissal if they reported.
3727. Are you thoroughly convinced in your own mind upon that point? Yes.
3728. *Mr. Jones.*] Did you communicate or indicate that interpretation to Mr. Hamilton? I did indicate it. I told him what the feelings of the men were in connection with these rules.
3729. You have stated that you did not consider it your duty to inform the manager of the blower of gas of which you had been informed? Yes.
3730. Does this explain what you mean: Rule 15 says:—"Should any unexpected discharge of gas occur, the overman must order all naked lights to be extinguished, withdraw the men and boys, and make the manager acquainted with the case, in order that the evil may be remedied and the places restored to their proper working order"; was that the simple reason why you did not write to the manager? I knew that these rules provided for it, and that a certain number of men were working where gas was known to exist with safety-lamps. More than that, the management for a long time had been paying those men who used safety-lamps 3d. per ton extra; therefore they must have been aware of the existence of gas.
3731. Do you know that the manager was aware of the large blower of gas? I could not say he knew of the existence of that.
3732. Was it possible for a blower of gas to exist that could be heard at 100 yards without the overman becoming acquainted with it? I should think not, but I do not know, as Westwood did not say whether he had reported it to the overman.

Mr. J. B. Nicholson.

13 May, 1887.

3733. I have read you the law in reference to the duty of the overman—was that the reason that deterred you from taking any steps as Secretary of the Union? Yes, that was the reason.
3734. *Mr. Croudace.*] In answer to Mr. Jones, you said that that portion of rule 15 referring to the duty of the overman prevented you from reporting this blower to the management? I did not consider it necessary under that rule.
3735. But I will read another part of the rule; going on from where Mr. Jones left off, the rule says: "Hewers and others, when using naked lights, are strictly cautioned against the discharge of gas where faults, rolls, and backs are met with; and on its appearance they shall immediately leave the place and report to the overman, and shall on no account return to the place without proper authority"; were you aware of that part of the rule? The hewer in question was using a safety-lamp.
3736. The rule still applies, does it not? I do not think so.
3737. *Mr. Croudace.*] The spirit of it shows what you are to do.
Witness. I beg to differ from you.
3738. *Mr. Croudace.*] You may differ with me if you like.
Witness. I do. I think there is a very great doubt about it; for a safety-lamp is very different from a naked light.
3739. *Mr. Croudace.*] Well, we will come to No. 6 of the new rules of employment; I would just like to ask you a few questions on it, with a view of putting yourself right—an order is, I presume, a command, or some instruction given? Certainly.
3740. You are quite sure of that? Yes.
3741. No. 6 rule says:—"Any employee interfering in any way with the orders issued by the colliery manager or his overman for regulating the work of the mine, shall be liable to dismissal without notice"; you see it applies only to "orders"; can you apply it to anything else by any twist youlike to give it? I do not think it requires any twist. I take this rule in conjunction with rule No. 3, and I say it prevents men from making any complaint whatever.
3742. By any twist can you, as an honest man, say that you misunderstand so simple a rule as that; it says, "Any employee interfering in any way with the orders;" you see you are confined to one thing—"orders" for regulating the work—it actually stipulates how the rule is confined? I will explain my meaning by stating, that if I objected to drive my place in the colliery further ahead from the cut-through, on the ground that it was too far in advance of the air, and the management said it should be driven ahead because I was going over a fault (which has been done), that would be interfering with the orders, strictly speaking.
3743. Am I to presume that, in the first place, you had received orders to go on with it? I have known such to be the case when men have been driving over stone.
3744. *President.*] Since these new rules came into operation? No; I have not been working in the Bulli Colliery since.
3745. *Mr. Croudace.*] I will put this rule to you again: "Any employee interfering in any way with the orders issued by the colliery manager or his overman for regulating the working of the mine shall be liable to dismissal without notice." Is not that very simple? It is very simple.
3746. An order, I take it, is this: Suppose the overman ordered a wheeler to wheel from Nos. 1, 2, and 3, and afterwards some miner ordered him to wheel from Nos. 5, 6, and 7, would not that be clearly a breach of the rule? Decidedly.
3747. Suppose, then, the overman ordered you and your mate to work in No. 1 heading, and Smith and son to work in No. 2 heading, and that afterwards you reversed the order, would not that be a breach of the order? It would.
3748. But would it be any breach of this rule or order if you suddenly struck a blower of gas or came across a bad piece of roof or a quantity of water (I do not care what it is), would it be a breach of any order if you went and reported the same at once. Do you really think that would be any infringement? Mr. White considered it an interference even previous to these rules being enforced.
3749. But would you think it a breach of No. 6 rule if you told the deputy and overman that you had met with a blower of gas unless they had previously said to you "If you strike a blower of gas you must not report it to anyone." Did you ever receive an order from the manager, or from the overman or deputy not to report to them a blower of gas or the presence of gas in any form? Never.
3750. Have you ever heard that any man had received any such order? I have never heard it personally, but I have heard the men say that they would be discharged for reporting.
3751. But you never heard any such order given? Never.
3752. Now, in reference to this rule 3, which says "*Absence from regular duties*" "Any miner or other employee found in any part of the mine or colliery other than that in which he should be working without the consent of the colliery manager, shall be liable to dismissal without notice." Is not that, in this particular mine, an absolutely necessary rule, particularly in this Hill End district? It would be if everything else was properly carried out.
3753. We are told that the men in the bords off No. 2 heading worked with naked lights. In the headings where a large quantity of gas existed, safety-lamps were used. Would it not be necessary to prevent the men working in the bords going into the headings with their naked lights? Exactly.
3754. Of course it would, and why allow the wheeler to go in the heading and hang his safety-lamp on the danger-board?
3755. *Mr. Croudace.*] The wheeler receives a positive order that he is not to take his lamp beyond the danger-board. If he did he would clearly break the rule. In this particular instance, there should be no misunderstanding, and I take this opportunity of having all these rules explained as best I can so that no one should turn and twist such a simple rule as this when, as far as I can discover, there is honestly and fairly no occasion.
Witness.] What other construction could the miners put upon the rule when they were told by Mr. Hamilton that the management would not allow any interference whatever.
3756. Did you mention anything of this blower to Mr. Hamilton? No; it was previous to the striking of the blower. I am not aware that any body was working in the pit at the time I speak of.
3757. Have you seen Mr. Hamilton since the blower was struck? Not to speak to him.
3758. What did Mr. Hamilton point out to you in reference to this particular rule? He said they could not alter the rules, and that they would have no interference with the management whatever.
3759. But did he specially mention rule 6? No.

3760.

Mr. J. B. Nicholson. 13 May, 1887.

3760. Did you not see the urgent necessity of having stringent rules, particularly in a colliery where gas exists? Yes; and I have always tried to observe them.
3761. Have you observed the system of ventilation that was pursued in this mine. Do you know the western door? I did know that a door was in existence before the strike.
3762. Did you know the door which separates No. 1 heading from No. 2? I was never in the gassy district while that turn was working.
3763. We are told that the turn and the bords off No. 2 heading were working with naked lights, and that gas was always being given off in No. 2 heading. Do you consider that a prudent principle? I do not, and I think it was done to save 3d. per ton charged when safety-lamps were used.
3764. It is a fact then that it was done, and that the 1st, 2nd, 3rd, 4th, 5th, 6th, and 7th bords were working with naked lights, and lights were also allowed in the cut-throughs? Yes.
3765. Is it a fact that the return air from No. 1 heading goes into No. 2 heading and returns by way of these bords? Yes.
3766. Would not the gas from this large blower have a tendency to go into these bords supplied by the return air? Yes; if there was not sufficient ventilation to carry it away. But of course, if it was sufficiently mixed with pure air the air the gas would become harmless.
3767. Did you ever hear the men working in these bords complain of any extra gas coming towards them, or of the danger of its doing so when this blower was coming off? No.
3768. Don't you think it likely that if there was such a large blower that they would have felt the effect of it? I had not an opportunity of knowing or of hearing their conversation.
3769. Is it natural to suppose so? It would be a natural supposition.
3770. When you were in the western district did you see any gas whatever there? We did not see a bit in the western.
3771. Independent of what masters may do, or masters' associations may do, the men can undoubtedly shelter themselves behind a much higher power for the purpose of making their own inspections of the mine at least once a month. Do you know that you can do that without interference? We have the right, but we were unable to carry into effect.
3772. Would you have me to believe that this was an impossibility at the Bulli Colliery where there were at least 160 men working. Was it impossible to get that number of men sufficiently interested in their own lives to pay 3d. per month each for the purpose of sending two men round the mine to inspect it? I believe they would very readily do it.
3773. Then why did they not do it, for there is no power to stop them? Had that conference been granted it would have been done.
3774. Would you have me to believe that the men so utterly disregarded their own safety that they would not pay 3d. per month to secure it? I do not know, but I believe that the men would not object to the expense, for I have always found them very willing to shell out where there is any cause for it.
3775. *Mr. Hilton.*] Have the miners got an anemometer for the purpose of testing the air when making inspections of the mine? I believe there are two or three in the district. [*The witness withdrew.*]

SATURDAY, 14 *MAY*, 1887.

Present:—

The PRESIDENT (DR. ROBERTSON), IN THE CHAIR.

MR. O'MALLEY CLARKE,	MR. JONES,
MR. NEILSON,	MR. OWENS,
MR. CROUDACE,	MR. HILTON.

Henry Osborne McCabe sworn and examined:—

Mr. H. O. McCabe. 14 May, 1887.

3776. *President.*] You are a mining engineer, and manager of the Mount Keira Colliery, Wollongong? Yes.
3777. I believe you have had extensive experience as a mining engineer in different parts of the world, Mr. McCabe? Yes, since 1881?
3778. And in some of the larger and better regulated collieries in the north of England? Yes.
3779. And consequently you have gained considerable knowledge of the properties of gas? Yes.
3780. When did you visit Bulli Colliery after the accident? At about half-past 10 o'clock on the night of the accident.
3781. Did you proceed into the mine on your arrival? Yes.
3782. Where did you go to first? I went into the straight, up Hill End, and got as far as that big fall.
3783. Did you go over the fall at that time? Not at that time. There was not sufficient room for the air to travel, and we arranged to make room.
3784. Did you afterwards proceed over the fall? Yes.
3785. With what object? To recover the bodies.
3786. Did you go over the fall in the straight-in heading? Yes.
3787. Did you come to any conclusion as to the cause of that fall in the straight-in heading? Yes; I considered it was the natural result of an explosion.
3788. Have you been long acquainted with the Bulli mine? Yes.
3789. I believe you were surveyor for the landowners, and as such you have travelled the tunnel several times? Yes.
3790. Did you observe whether any body of stone was resting on the top of the timber? Yes.
3791. And if that timber from any cause was knocked down it would have a tendency to cause a fall? Yes.
3792. We understand that the regulating door at the western was destroyed, and that the air that formerly went into the Hill End district was coursing down into the western? Yes, that was so.
3793. Did you repair that door temporarily? No; that stopping was put in some little time before I got to the mine.
3794. The following day did you search the No. 1 and No. 2 districts, in the Hill End section, with a party of men whom you conducted? Yes.
3795. Were you the first to arrive there? Yes.

Mr. H. O. McCabe. 14 May, 1887.

3796. When you reached the top of the bank head, or the top of the incline, did you notice six bodies lying there? Yes, five or six.
3797. Did you examine those bodies to ascertain whether they had or had not been burnt? No, I did not examine the bodies there; but here are some tokens that we got on the top of the incline. [*The witness produces portions of bark from a prop, also several tokens picked up by him at the top of the incline.*]
3798. Does that bark appear to be burnt? No; it does not seem to be burned; it seems to be blackened with dust.
3799. Did you not examine the bodies? No, sir.
3800. Did any one of your party examine the bodies? Some of them did.
3801. But you have no personal knowledge as to whether they were burnt or not? No.
3802. Did you examine the props and other combustible material along the road to ascertain whether fire had travelled along that road? Here and there I did.
3803. Did you observe any at that point? No fire, or a trace of it.
3804. Before going to No. 1 and No. 2 headings did you discover the bodies of two boys? Yes.
3805. Were they burned? I did not look at them to discover that. I would sooner take evidence from the props, &c.
3806. Did you, or any of your party, take a note of the position of the bodies for the purpose of identification and otherwise? When we were down in No. 1 heading Mr. Green entered them on a piece of paper; I had no book.
3807. Mr. Green was along with you? Yes.
3808. How many bodies did you pass in No. 1 heading? Seventeen, according to Mr. Green's tally.
3809. Did you examine those bodies to ascertain whether they were burnt? No, I did not.
3810. In what way were they lying on the road? As if they were making out-bye. One man appeared to have been running, and knocked down in the act.
3811 Did you go into any of the bords? Yes, I went into several bords along No. 1 heading.
3812. Did you discover any gas in the bords? None in the bords.
3813. Your examination of the bords would be on Thursday—the day following the accident? Yes, on the Thursday morning.
3814. Had gas existed there, would you have discovered it on the Thursday at that time? Yes, I think so.
3815. The ventilating current was deranged on account of the accident? Yes.
3816. And the full quantity of air did not pass round the bords? No.
3817. Is that your reason for stating that, had gas existed in any of the bords, you would most likely have discovered it? Yes.
3818. In the face of No. 1 heading, did you examine it? Yes.
3819. Did you see bodies lying in the cut-through? There was one lying there.
3820. Was there a deputy's lamp beside it—a copper lamp? I did not see the lamp that day; I heard next day that one had been found.
3821. Did you examine that man to discover traces of burning? No.
3822. Did you find gas in the face of No. 1 heading? We found just a little there.
3823. Did you penetrate into the face of No. 2 heading? Not until later in the day; I got into No. 2 heading about 1 o'clock.
3824. Were you the first to get into No. 2 heading, as far as you know? Yes.
3825. Did you examine for gas in No. 2 heading? Yes, there was a little gas there.
3826. Did you roughly examine the quantity? It ran about 6 or 7 yards, I think.
3827. How deep was it? I just got the trace of it in the roof.
3828. Did you go to the face of heading, beyond the skip? Yes, I went in to look for a body.
3829. There was no body there? No.
3830. And what did you discover at the face of the heading? There appeared to have been a shot fired there.
3831. Then, where did your exploration extend to after passing through the cut-through from No. 1 heading, down to the bords of No. 2 heading on the main road—did you examine for gas in those bords? Well, I did not go down every bord. Robins was with me, and being slightly sick, I asked him to go, which he did, but saw no gas. I have no personal knowledge.
3832. Did you go into Nos. 3 and 4 afterwards? No, the next shift took those.
3833. When did you return to the mine, Mr. McCabe? On the Friday morning, at 6 o'clock.
3834. Where did you go to on Friday morning? The first thing we did was to look for four bodies said to be missing in Hill End.
3835. Did you find them? Yes; they were found through the stopping at the foot of Hill End.
3836. What other portion of the mine did you visit on Friday? We travelled down the Hill End return to the Western.
3837. In what condition did you find the return? It was in good condition—better than we found it last Saturday; that bit of a fall there took place since the explosion.
3838. Separating the return from the western main tunnel there is a door? Yes.
3839. Was that deranged? Yes, it was blown down, and the overcast too.
3840. How does the return from Hill End pass the western road? By the overcast.
3841. Did you examine that overcast? Yes, it was blown down.
3842. In what condition did you find the western, or did you explore it, after travelling the return? Not then. We went back into Hill End and made arrangements to get the bodies out. We were rather short of men, and we went out to send more men in before we opened up the western to get the bodies out.
3843. Had you also the exploring party that penetrated the western? Yes.
3844. How many bodies did you find in the western? Sixteen.
3845. Was much damage done to the roads there? No, with the exception of the fall on the flat.
3846. Proceeding from the overcast towards the face of the western tunnel, did you observe any damage done to the doors? Yes, there was a door blown down, that was driving the air up the right-hand heading.
3847. Where did you find the men in the western? They were all on the roads, as if they were coming down the roads.

3848. As if they had been apprised of danger? Yes; as if they had been apprised of danger and were making out.
3849. Did you examine the timber in other parts of the western roadways to ascertain whether a good deal of fire had penetrated that part of the colliery? Yes.
3850. Did you find any trace of fire? No.
3851. Did you examine the quantity of air on your visits to the Bulli mine since the accident? No; I had no anemometer with me, but Mr. Rowan had, and he told me.
3852. Do you recollect whether the quantity was materially diminished by the explosion? It was materially diminished, of course.
3853. Did you go to the furnace? Yes.
3854. How was the furnace working? It was burning very brightly and working well; there was any amount of air there.
3855. On what day was that? On the Friday.
3856. By that time the workings would naturally be cleared out and the ventilation partially restored? Yes.
3857. How long had you been acquainted with the gassy section, or Hill End district? I have known the colliery for the last five years.
3858. At the entrance to the western road from the main tunnel a regulating door was placed? Yes.
3859. Can you describe to the Commission the character of that door, as some little dubiety appears to exist on the point; was there a slide—a regulator upon it, or was it simply a hinge door? It was a door that opened and shut to allow the sets to pass. I think it had a hole in the middle to allow a certain quantity of air to pass through. That is what I understand.
3860. You have never measured the quantity of air on any occasion that you found passing down the western? No.
3861. Generally speaking, did you consider Bulli a well ventilated colliery? Since this new furnace was put up there has been plenty of air there.
3862. How long has this new furnace been in working order? Since the beginning of the year, I understand.
3863. Do you know of your own knowledge whether an attendant was placed at the western to open and shut the door on the passing of the sets? No; I presume there would be; I was never in the pit when she was going there.
3864. There is also a door between Nos. 1 and 2 headings on the main tunnel? Yes; it was to drive the wind up No. 1.
3865. And also a door on the diagonal between Nos. 1 and 2? Yes.
3866. Was that for the same purpose? Yes.
3867. Do you know of your own knowledge whether trappers were kept to attend these doors? No.
3868. Is the presence of suchlike doors on main roads an extraordinary circumstance in mining? No; it is done occasionally.
3869. Have you frequently seen doors that regulate the currents on main tunnels? I have them myself.
3870. Do you provide trappers to attend them? Yes.
3871. We are told that a train of skips in the Bulli mine consisted of twenty; how long do you think such a train would occupy passing through a door? Running at the rate of 3 miles an hour, it would take about half a minute to a minute.
3872. The duty of the attendant is to open the door as soon as a train comes forward, and shut it immediately the train passes? Yes.
3873. Would the opening of such a door materially alter the ventilating current in Nos. 1 and 2 district? Not if it was merely open long enough to allow a set to go through.
3874. If it had been propped open by a prop or stone, would that have a different effect on the current? Yes.
3875. Have you ever heard, Mr. McCabe, or do you know of your own knowledge, whether on any occasion they were found propped open? No.
3876. You never heard of it? No.
3877. No. 1 was the intake? Yes.
3878. And the bords of No. 1 would necessarily receive the fresh air before the ventilating current reached the face of No. 1 heading? Yes.
3879. No. 2 heading, and the bords off it, would be on the return from No. 1? Yes.
3880. Do you know how much air circulated through Nos. 1 and 2 since the new furnace was put in operation? I have heard that it was 12,000 feet.
3881. Who informed you? I think it was Mr. Rowan, the inspector.
3882. Would you think that an adequate amount of ventilation? Yes.
3883. Would you consider that with 12,000 feet of air passing over or through seven or eight working bords, the use of naked lights in those bords was a dangerous operation? No; not if there was no gas giving off.
3884. Have you ever seen any gas given off in these bords? No; I was only in them on this occasion.
3885. You say that on the occasion upon which you examined for gas, had it been present, it would very probably have shown itself? Yes.
3886. On account of the derangement of the ventilation? Yes.
3887. Would you apply the same remarks to the bords off No. 2, gas being found in the headings of Nos. 1 and 2? It would, doubtless, be better to use safety-lamps there.
3888. Although safe to use naked lamps in the bords off No. 1, you consider it would be better to use safety-lamps in the bords off No. 2, that being on the return? Yes.
3889. The air current being fouled more or less by the gas issuing from Nos. 1 and 2? Yes; that is my meaning.
3890. Did you find any brattice in Nos. 1 and 2? No.
3891. Do you consider that the presence of gas in No. 1 and No. 2 headings ought to have suggested brattice being applied or adopted? Yes.
3892. For what purpose? In order to keep the ventilation right up to the face, and sweep out the gas in small quantities as it issued.

Mr. H. O. McCabe.

14 May, 1887.

3893. Do you, of your own knowledge, know anything of the condition of the returns from the western to the furnace? No, I have never travelled them; but there must have been a return, for there was 12,000 feet of air at Hill End, and 10,000 or 12,000 from the western. There must have been room for it to travel somewhere.
3894. Have you come to some definite opinion as to the cause of the disaster? I consider that the gas fired in No. 2 heading, proceeded down the heading, a portion of the flame, on passing through the last cut-through, shot towards No. 1, and probably picked up a little gas from No. 1, and proceeding down No. 1 the two currents joined. The blast proceeded down No. 2 into the third bord above the tunnel, through the cut-through, out of the third bord, into the tunnel.
3895. What evidence of destruction have you in the tunnel? These stoppings blown down here [*tracing the positions on the plan*]. The current going against the stoppings on the main tunnel, blew these upwards from the tunnel, and separating, one portion of the blast proceeded out to the tunnel, and another towards No. 3. and No. 4.
3896. Trace the position that goes in towards the face. The portion of the blast that passed inwards towards Nos. 5 and 6 expanded itself at the face. The portion that passed through the stoppings followed the return, and on reaching the door leading into the western, tilted it, and proceeding over the overcast to the left, blew the overcast down.
3897. Having blown the overcast down, where was it likely to go then? Finding an exit at the overcast, this portion was carried inwards towards the face of the western workings, and another portion backwards, the entrance to the western.
3898. In your opinion that is the course the blast took, and you are guided in your opinion by the evidences of the workings, charred props and coal-dust? Yes; and the position you see the skips in, the skips in the western workings having been blown towards the face.
3899. You have had considerable experience, Mr. McCabe, in large and well-regulated collieries, where strict discipline requires to be maintained, in the North of England? Yes.
3900. In the presence of gas what practice is followed as to the firing of shots in any of the collieries with which you are acquainted in England? The miners were not allowed to fire their own shots at all; they were always fired by the deputy.
3901. How did you fire them? With touch-paper, lighted by a heated wire passed through the interstices of the gauze.
3902. Do you consider that preferable to lighting the touch by tilting the flame of the lamp? Very much; I would not like to see that done.
3903. You think it would be unsafe? Yes; and it would damage the gauze.
3904. Would there be a liability of the flame passing through? Yes, there would be danger; but where you can detect the trace of gas, shots should not be fired.
3905. In England you refer to? Yes.
3906. The theory has been propounded here that it is possible an accession to the force and intensity of the blast might have been derived from a quantity of gas stored in the first or second disused bord off No. 1 heading. Do you consider that a feasible theory or hypothesis? No; I hardly think any gas would be stored there.
3907. Knowing the position of these bords with respect to the intake air, supposing this second bord to have contained a magazine of gas, and it had been fired from No. 1 heading, would you have expected to see second evidences of an explosion? Yes; I should have expected to see the stopping blown down.
3908. Would you have expected to have seen it blown out towards No. 2? Yes.
3909. Did you observe any other stoppings to be blown down between Nos. 1 and 2? No; the tops were blown off them.
3910. How many? I do not think more than four.
3911. From the time of the explosion the current of ventilation would be suspended? Yes.
3912. You carried the ventilation with you as you went along? Yes.
3913. Do you think that the quantity of gas in Nos. 1 and 2 headings, unassisted by other explosives, would have caused the damage done? I hardly think it would. I have an idea that coal-dust assisted the gas explosion.
3914. Picking up the coal-dust, it went along, and increased in this way in volume? Yes; the coal-dust provided fuel, as it were.
3915. If the area of the workings had been considerably larger, do you think the effect of the explosion would have been so remarkable? No; I think it would not have been much more than a puff if it had not been so confined.
3916. The whole of the force, in fact, was directed into these two places? Yes.
3917. *Mr. Hilton.*] I understood you to state to the President that you did not find any evidence of brattice being used in the gassy section? Correct.
3918. Do you consider it was necessary to use brattice in the gassy section? In those headings I would use brattice.
3919. *Mr. Owens.*] Which way did you proceed to the headings? Up the engine plain. I went up the slacky way first.
3920. Did you go over the big fall near the tunnel mouth? Not till last Saturday, because I could not get that way at first.
3921. You are of opinion that if a magazine of gas existed at the point which has been indicated, that the force of an explosion from that would have shown itself on the nearest stopping? I am of opinion that if a separate magazine of gas existed in the second bord above the tunnel, that the stopping opposite the mouth of that bord would have been blown clean away towards No. 2.
3922. *Mr. Jones.*] I think you have already stated that after arriving at the last stenton through No. 1 heading, you found little or no gas, and you have further stated that you found a similar amount in No. 2 heading. I suppose that would be at a time when the ventilation was virtually suspended? Yes.
3923. Now, with an air current of something like 12,000 feet passing, would you have expected to find any gas at all? That would depend. You see, there is a roll in the face of this heading, and the gas might make at one time and not at another, coming off that roll.
3924. You say that on the occasion of your visit you found little or none. I ask you, would you have expected to have found any with 12,000 feet of air passing? I do not say you would not see gas at all with a bigger ventilation.

3925.

3925. Do you think there could be a sufficient accumulation with that amount of air passing to cause the destruction you saw at Bulli? It would depend upon how much gas was making off that roll at the time the air was passing.
3926. The roll was there at the time? Yes; it is there now.
3927. And you say you found little or no gas there? Yes.
3928. Then I suppose you would say the probabilities are that the roll gave off less when you visited it than when the explosion took place? Yes.
3929. Do you think it possible that an amount of gas had accumulated sufficient to cause the destruction you have described? No.
3930. Do you consider the Bulli mine a dusty mine, such as you have seen in the North of England? No. It is not a very dusty mine; but it is dusty.
3931. Do you consider it dusty in Nos. 1 and 2 headings, travelling to the Flatt, where only the men and horses travel? It is dusty.
3932. Do you think there is sufficient dust to be likely to participate in an explosion? Yes. You see we do not know this gas yet. We have not experimented upon it. But we must take dust as a factor which would increase the force of an explosion.
3933. Can you point to any instance in your experience where an explosion has taken place, and dust has played an important part, in a mine such as this? I have only seen one explosion before this.
3934. But from your reading you may be able to speak? Well, I was reading the other day of an explosion in a mine that gave off no gas at all—the explosion being caused simply by dust.
3935. You have already referred to the door on the main engine bank opposite No. 1 and No. 2? Yes.
3936. Presuming that one of these doors had been left open, would that cause an accumulation of gas? Yes; you would expect an accumulation of gas there if that door was left open.
3937. Can you refer to any dusty mine in the old country that would compare at all with the circumstances of Bulli, where an explosion has taken place? I know of none.
3938. We have been told that previous to the new furnace being started it was a custom to work with safety-lamps in the bords off Nos. 1 and 2 headings? Yes.
3939. Now, in view of what has happened, and in view of your own knowledge and experience that little gas could have accumulated in these headings, do you think it would have been a greater measure of safety to work the whole of these places with safety-lamps? Yes. But where you take in safety-lamps you also bring in a new element of danger.
3940. Do you think it judicious of the management to consult with the men on the question of a danger, both for the protection of the lives of the men and the property? Well, the manager is supposed to be competent, and the men are supposed to report to the manager if they see any danger.
3941. But in view of these places having been worked with safety-lamps previous to the new furnace being erected, and the fact that they had been known to give off gas, would it not have been only a wise precaution to have used safety-lamps in these particular places—No. 1 and No. 2 headings? Do you mean in the headings?
3942. I am referring to the bords? Yes; I think it might have been better to have kept safety-lamps in them.
3943. *Mr. Clarke.*] In what way do you think the gas was fired? I think it was fired from a shot in No. 2 heading.
3944. In what different ways might the gas fire from a shot? Well, the shot might be very slightly tamped, and it might be blown out, in which case the flame would come from it.
3945. Would the nature of the material used in tamping have anything to do with it? Yes. Coal-dust would be a very dangerous element.
3946. Then you think the gas did fire from a shot? Yes.
3947. Would the finding of an ordinary miner's lamp near the face two days ago have an influence upon your opinion? Well, it might have fired at that lamp if it was alight.
3948. *Mr. Jones.*] Respecting the finding of the miner's lamp, is it not possible that the lamp might have been taken there for special use? Yes.
3949. That is travelling outside Nos. 1 and 2 headings to the mouth of the tunnel? Yes; it might have been that.
3950. *Mr. Croudace.*] We have been told, Mr. McCabe, that there was a certain door here between Nos. 1 and 2 headings? Yes.
3951. There is one on the diagonal course, and a single door at a point between Nos. 3 and 4? Yes.
3952. Now with the same course or system of ventilation previous to the strike—that is, on the intake tunnel—and the same number of doors existing, and the same course of ventilation, but with this addition that since the strike there was a trapper-boy placed on the door between Nos. 3 and 4, which would you consider showed the greater precaution? I should think greater precaution was shown since the strike by placing the trapper-boy to open and shut the door.
3953. We have also in evidence that, previous to the strike, there was only a quantity of from 2,000 to 4,000 feet of air going through the last holed stenton in No. 1 heading, and between Nos. 1 and 2, and ventilating the whole of this Hill End district. Since the furnace, we have the statement that a new furnace has been put in operation, and that there has been measured 12,000 feet of air going through the same stenton, and ventilating the same district. Would you consider that a great improvement was shown there? Yes; the increase in the ventilating current to 12,000 feet of air would be a great improvement.
3954. Single doors are placed at these different points; do you consider that these portions of the mine would have been rendered safer had there been two doors placed at a sufficient distance apart to allow travelling sets to pass through without both being opened at the same time? Yes, it would, no doubt, have been safer to have two doors.
3955. But having only one door do you consider that all knowledgable care was taken in placing one trapper at each of these doors? Yes; I do.
3956. Now, we have been told that it has been the custom to fire shots at Bulli by tilting the lamp to light the touch-paper. Do you consider that unsafe? Yes.
3957. What would you say, if I told you that it has been known for a man to work with the top of the gauze of his lamp actually burnt out? I think it would be highly dangerous, and I think the man who would do such a thing ought to be put in goal.

Mr. H. O. McCabe. 14 May, 1887.

3958. In using safety-lamps, do you consider it prudent to have them locked? Yes. [*Plan examined.*]
3959. It has been advanced that the explosion in its course might have ignited gas from two or three bords started on the left-hand side of this return airway, and which are driven up to the dyke. Do you think that at all probable? No; I do not.
3960. Did you examine these stoppings between the two headings [*referring to the workings to the west of the main tunnel*]? No.
3961. Do you think a second explosion took place there? No; it would not have been possible, because the body immediately opposite to these bords would have been charred to a cinder.
3962. If I told you that the stoppings immediately opposite these bords were not disturbed at all? That would upset any theory about gas being there.
3963. What would have been the result of any body of gas being there? It would have blown those stoppings out.
3964. *President.*] Does that place bear any evidence of being the centre of a separate explosion? No; none at all.
3965. *Mr. Croudace.*] It has also been advanced that the explosion might have gathered force from the admission of gas in the old workings here [*pointing to old workings west of the dyke*]. Do you think that probable or possible? No; I cannot see any reason for gas being in those old workings at all. There was sufficient air going through the old workings to keep them clear.
3966. Have you heard of any gas being taken up to the furnace, or showing any signs of being near the furnace? No.
3967. Have you any idea of the extent of face open at Hill End—that is, in that particular part of the pit? I have not.
3968. Roughly, do you think it would be more than an acre? About that, I should say.
3969. Would an acre of opened-up coal be a very small limit in which to confine an explosion? Yes.
3970. In other words, would a comparatively trifling amount of gas in such a limited area cause the damage that we have seen? Yes; I have said before that it would only have been a bit of a puff if it had not been so confined.
3971. Coming to Nos. 3 and 4 headings, would it have been more prudent to have driven the main tunnel much further ahead—that is, to have had Nos. 3 and 4 much more in advance of Nos. 1 and 2, and separate the two pairs of headings by a greater distance, retaining Nos. 1 and 2 for a return airway? Working by panels altogether, yes.
3972. Would it have the effect of confining any explosion to each district? Yes; the effect of panels would be to confine an explosion.
3973. In other words, instead of breaking away the bords from both the headings to keep Nos. 1 and 2 wholly and solely in a return? Yes.
3974. Have you on any of your visits, either before or since the strike, seen any accumulation of gas in that mine anywhere that you know of? Never any accumulation at all. When I have been surveying the men I have had with me occasionally would say not to go in such and such a cut-through, as there was gas there. If I had met with any accumulation of gas I should have been blown out of the pit, as I used to go all over with a naked light.
3975. Have you heard of any such accumulation? No. The only gas I ever heard of was in the headings past the stenton, approaching the whin dyke.
3976. *Mr. Owens.*] Assuming that this door, between Nos. 1 and 2, was kept open for a considerable time, which shut off the air from No. 1 and No. 2, do you think that the effect would be to cause an accumulation of gas in No. 2? Yes; if it was kept open any length of time.
3977. And the bords here being worked with naked lights, would there be any danger of the gas being carried on to the lights? If the gas accumulated there, owing to the door being opened (and thus carrying the air past the headings), when it was shut again and the ventilation was restored the air would probably drive the gas on to the naked lights, and thus cause an explosion, if the gas was present in sufficient quantity.
3978. How long would the door have to be opened to do that? About half an hour, I should say.
3979. In your opinion where was the accumulation of gas that caused this explosion in Bulli mine? I consider that the gas and coal-dust have done it together. The explosion evidently started in No. 2 heading. The cut-through is scorched with fire from top to bottom.
3980. You do not consider that there was an accumulation of gas in any other part? No.
3981. *Mr. Jones.*] Do you know of your own knowledge whether any steps were taken to water the roads in Bulli mine? No.
3982. Do I understand you that as a general practice you would not permit ordinary workmen to fire their own shots in the presence of gas? Yes.
3983. *Mr. Hilton.*] Supposing anything occurred to the door at the junction of the western, would it cut off the ventilation to the Hill End district? Yes; it would diminish it considerably.
3984. Supposing those stoppings along the western road were in a good state of repair, and a regulating door was placed in the western return, would not that be a better arrangement than a door at the western junction? Yes; I am sure it would.
3985. And there would be less liability of accident? Yes. [*The witness withdrew.*]

John Evans sworn and examined:—

Mr. J. Evans. 14 May, 1887.

3986. *President.*] You are the manager of the Mount Kembla Colliery, Mr. Evans? Yes.
3987. Are you a certificated colliery manager under the British Act of 1872? Yes.
3988. Have you had considerable practice as a mining engineer in the larger and better regulated collieries in Wales? Yes; I have been brought up from my boyhood in fiery mines.
3989. Where quantities of explosive gas existed? Yes; in very fiery mines.
3990. Did you know Bulli Colliery previous to the accident? I did not.
3991. Had you been through the workings of the colliery previous to the accident? No.
3992. And you know nothing about the conduct of the ventilation and the operations of the colliery before that? No; I knew nothing whatever about the colliery before the accident. 3993.

Mr. J. Evans, 14 May, 1887.

3993. When did you arrive at the colliery? I arrived there on the evening of the accident.
3994. Will you very shortly tell us what you did, and where you went? Having ascertained that an explosion had taken place, I went to the mine, and meeting Mr. Neilson and Mr. Ross, I offered my services to direct a search party, and they were accepted; the party was organized, and we proceeded into the mine to explore as far as we possibly could; I was satisfied that an explosion had occurred, and I set the members of the search party to clear the falls, put up stoppings, and penetrate into the mine as far as possible; we came across several bodies on the top of the incline.
3995. Did you carefully examine the bodies? I did.
3996. Did you find any marks or traces of burning upon them? No; I was satisfied they were not burnt.
3997. Did you examine the hair of any of the bodies? I did.
3998. Did you notice whether the hair was singed? Well, the hair was a little singed, as if it had been exposed to slight heat.
3999. And where could you expect the heat to come from—would you say it was from the flame caused by an explosion? I consider that the heated air after the explosion might probably singe the hair.
4000. Did you examine any of the props round the bodies to ascertain whether they bore any evidence of burning? Yes; I carefully examined them, and found no evidence of charring or burning or anything of the kind.
4001. Here is some string, Mr. Evans, evidently the string of some tokens picked up near the bodies; does that string present any evidence of burning [*string handed to witness*]? No; I do not consider it does.
4002. Would the hair of a man's head, or this string, be most sensitive to flame? Well, I should think the hair would be the most sensitive.
4003. You say the hair seemed to be singed? Yes.
4004. Were the clothes of these men burnt? No.
4005. Did the skin show signs of burning? The skin was affected as if by friction; they bore evidence of having been blown some distance, being very much lacerated and cut.
4006. Very well; what did you do then? After completing the shift up to 6 o'clock that morning I left, and was relieved by Mr. Green and Mr. McCabe.
4007. When did you return? I examined the mine again that day, in company with Mr. Rowan; measuring the ventilation we found 44,000 cubic feet passing.
4008. Of that amount how much was going into the Hill End district? Just at the entrance of the tunnel (No. 1) I found 10,000 cubic feet, but before reaching the place that quantity was reduced by leakage to 2,000 feet.
4009. Had the stoppings been blown down? Yes.
4010. Would that account for the leakage? Yes.
4011. Did you measure the quantity of air going into No. 1 heading? I do not think we did measure it on the heading; I have no recollection of measuring it there; but at the bottom we found on one occasion 10,000 cubic feet; there was a stopping or curtain put up to direct the current into No. 1, so that, with the exception of a little leakage there, this 10,000 feet was directed into No. 1; that was on the Thursday.
4012. On the Thursday morning you found 44,000 feet passing through the main tunnel, of which 10,000 feet was found passing through at the foot of No. 1? Yes.
4013. Did you examine the amount of air passing through the last stenton? Yes.
4014. How much was there? 2,000 odd feet; I remember that exactly.
4015. Were you present when the bodies were found in No. 1? I was not.
4016. Did you examine any of them afterwards? I only examined the body that was found in the 5th bord, I believe in No. 1.
4017. Was that Olsen's body? Yes; we found it had been accidentally left by the search party.
4018. Was it burnt? No.
4019. Do I understand you to say that you went through these workings on a tour of examination with Mr. Rowan? Yes.
4020. Did you examine for gas in all the bords off No. 1 heading? I did.
4021. Did you find any trace of gas on the Thursday? No; I did not find a trace of gas in any of the bords.
4022. Did you find any gas in No. 1 heading? I did.
4023. How much did you find? About 8 or 9 yards of it, a foot thick.
4024. Passing the cut-throughs did you find gas in No. 2 heading? Yes; there was 15 to 20 yards of gas there, about 18 inches thick.
4025. Was it a quick gas? Yes; it filled the lamp quickly.
4026. Did you observe a danger-board opposite the stenton at No. 1? Yes.
4027. It was standing? Yes.
4028. We are informed that an open lamp was found on a prop to which the danger-board was fixed. Did you see that board? Yes; it was a small wheeler's lamp.
4029. In what condition was the lamp? The solder on the lamp had been melted as if by great heat.
4030. Did you find any other lamps? Not in that heading.
4031. In No. 1 heading did you discover anything? No; I discovered nothing except that the danger-board had been blown down in the direction of the heading; but I discovered a coil of fuse in one of the bords off No. 2 heading, which was burnt or charred.
4032. Were you present on a subsequent occasion when some one discovered some loose powder in No. 2 heading? Yes; I believe that Mr. Dixon and Mr. Carpenter and some other gentlemen found a quantity of loose powder in the face of No. 1.
4033. Was there any fuse found there as well? I do not remember the finding of any fuse.
4034. Did you examine, with Mr. Rowan, the face of the bords off No. 2 heading? Yes.
4035. Did you discover any gas in any of these bords? No; none whatever.
4036. Would you infer from that, looking at the then deranged state of the ventilation, that no gas had been given off by these bords immediately previous to the accident? Yes.
4037. Did you examine the main tunnel, the stoppings at the foot of No. 2, and the Flatt on the main tunnel, and also Nos. 3, 4, 5, and 6? Yes.

Mr. J. Evans. 14 May, 1887.

4038. Did you examine those places for gas? I did.
4039. Did you discover any? None whatever.
4040. Does the same remark apply to these places that you applied to the bords off No. 2 heading? Yes.
4041. That is, if gas was given off in these places at the moment of the accident, you would probably have discovered it the day after the accident? Yes.
4042. Did you hear any gas issuing from crevices or blowing in either No. 1 or No. 2 headings? Well, yes, I noticed a little humming in Nos. 1 and 2 headings.
4043. That was probably due to gass issuing from the coal? Probably, and perhaps to a slight quantity of water.
4044. Did you notice whether the doors at the foot of and between Nos. 1 and 2 headings were or had been destroyed? I noticed they were destroyed.
4045. In what direction had they been blown? I believe this door [*pointing to the plan*] was blown towards the face of the tunnel. I cannot be sure, but I believe I saw fragments blown towards the face of the tunnel.
4046. Which door do you apply your remarks to—the one on the tunnel or the one on the diagonal road? The one on the tunnel.
4047. In the presence of gas in Nos. 1 and 2 headings, do you consider that it was prudent to permit the workmen in the bords off No. 2 heading to work with naked lights? [*Question not answered.*]
4048. With gas known to exist in Nos. 1 and 2 headings, was it safe, in your opinion, to work with naked lights in the bords off No. 2 heading? Yes.
4049. You think so. Were the bords off No. 2 ventilated by the return current? Yes.
4050. Would that be likely to be fouled by gas from Nos. 1 and 2? Not to a dangerous extent.
4051. Would that depend upon the amount of gas issuing from Nos. 1 and 2? Yes.
4052. Supposing a dangerous quantity of gas to be issuing from Nos. 1 and 2, would you still say so? No; but I do not consider the amount of gas given off by No. 1, in view of the amount of air passing, sufficient to cause a vitiation of the air.
4053. How was the gas from No. 1 and No. 2 removed from these headings—that is, how were they ventilated? Simply by means of the cut-through.
4054. Was that sufficient to remove the gas from the face? Well, no; I would have put a small quantity of brattice up to carry the air into the face, and dilute the gas as it was made, and so sweep it away in small quantities.
4055. So far as you have observed, was that done? No; I do not think it was.
4056. What are your views as to the firing of shots in the presence of gas? I am of opinion that no shots should be fired in the presence of gas under any circumstances.
4057. You would not use explosives? No.
4058. If you were told that high explosives, such as dynamite, nitro-glycerine, and such like explosives were used with wet tamping would you alter your opinion? No.
4059. You do not think it prudent? No.
4060. If you were informed that the Commission, which for a number of years has been directing its attention to this subject, by a series of elaborate experiments, had arrived at conclusions which pointed to the safety of firing high explosives with wet tamping, would you be inclined to accept their views? Well, I would, because they would have made searching and diligent investigation into such matters.
4061. Have you ever made any such experiments? No; I have not.
4062. According to the evidence, the method of firing shots adopted in Bulli Colliery was this: The common way of lighting a shot was to strike a lucifer match and light it, or, as in the great majority of cases, to tilt the safety-lamp to one side, allow the flame to impinge upon the gauze, and apply the piece of touch-paper outside the gauze in order to light it by means of the flame inside, and then ignite the fuse. Was that in your opinion a safe or prudent step? No; in my opinion it was a most dangerous practice.
4063. Can you suggest any other mode whereby greater safety or less danger would be secured? Yes; the shot should be fired with a red-hot wire.
4064. Passed through the interstices? Yes. But in no case should a shot be fired in the presence of gas. I lay down that as a basis.
4065. How would you proceed in places where there were stone rolls, as in Bulli? I would cause a sufficient quantity of air to circulate, and thus dilute the gas.
4066. You qualify the rule you have laid down to the extent that you would sweep out the gas as it was made? Yes.
4067. In saying that "Shots should not be fired in the presence of gas," you mean when the gas will show in the safety-lamps? Yes.
4068. Did you closely examine the western district of Bulli? I did.
4069. Did you observe any evidences of an explosion, or the effects of an explosion there? Yes.
4070. What were those evidences? Well, falls had occurred; the skips were blown in different directions, and other damage was done. On my first inspection I did not see any trace of fire in the western district; but since then I have had an opportunity of re-examining the mine, and I noticed some small incrustations of coal-dust about.
4071. In what part? In the western; in the return, I believe, from the Hill End.
4072. In what position from the return? Facing the main tunnel, contiguous to the door.
4073. The air-crossing over the main tunnel was blown down—is that so? Yes.
4074. Did you examine for gas in the face of the western workings? Yes.
4075. Did you find any trace of gas in the safety-lamp? No; not the slightest trace of gas.
4076. In your second examination of these districts did you notice any place in Nos. 1 and 2 where a pipe had been inserted in a blower? No.
4077. Have you ever heard of such a thing? No; I have not.
4078. From your inspection of the districts have you come to any decided conclusion or opinion as to the cause of this accident? Yes.
4079. And what is your opinion? I believe that an explosion caused by the firing of a shot occurred in No. 2 heading, the shot having been fired in the presence of gas which might, or might not, have been detected by the aid of a safety-lamp.

4080.

4080. Have you satisfied yourself as to the course pursued by this blast? Yes.
4081. Will you shortly state the course? Yes. I am of opinion that the seat of the explosion was at the face of No. 2 heading. Proceeding down to the first stenton, a portion of the blast travelled through No. 1 heading, down to the main tunnel and outwards. The other portion went down through No. 2 heading near the entrance to the bords which had no cut-through, and travelled into the bords that had a cut-through down to the lowest bord, and coming out, blew straight through the stenton into No. 1 heading.
4082. Would that account for the stopping opposite No. 2 entrance being blown into the old workings? It would.
4083. Are you aware whether a horse and man were also blown through that stopping? Yes.
4084. About what distance from the tunnel were they lying? I should think the horse lay from 22 yards to 25 yards distant, and the men were lying in close proximity to the horse.
4085. Did you observe any skips on the diagonal road leading from Nos. 1 and 2, approaching the main tunnel? Yes.
4086. How do you account for the skips being in that position—where in all probability had this train of skips been at the moment of the explosion? I believe they must have been going down No. 1 heading.
4087. And do you think they were blown into the position they occupy now? Yes.
4088. Do you know if the positions of the skips have been altered in any way since the explosion? Yes; they have been slightly altered, because I found a body under one of them, and we had to tumble the skip in order to get the body out.
4089. Proceeding on to the Flatt, did you observe any evidence of the explosion? No evidence of fire, but I noticed evidences of force.
4090. Where did you notice evidences of force? Right along the main road, as if it had travelled towards the entrance of the main tunnel.
4091. There are two trains of skips on the Flatt between Nos. 2 and 3—were these damaged or tossed? Yes.
4092. As if considerable force had been expended upon them? Yes.
4093. How do you account for such a large loss of life from such a comparatively small accumulation of gas in No. 2 heading having been exploded? I have no doubt that the coal-dust on the Flatt played an important part in the explosion.
4094. In what way? By aggravating the force of the explosion, and creating a large percentage of carbonic oxide, which is very fatal to life.
4095. Would you be inclined to ascribe the terrible sacrifice of human life to the fact of such a small area of workings being involved in the workings? Yes.
4096. Had it been possible for the quantity of gas that you suppose to have exploded in No. 2 heading to have expended itself in a large area of the old workings, would you have anticipated the same disastrous results? No; I should not.
4097. Do you think, from your rapid inspection of these districts, that there have been separate centres of the explosion—in other words, that the flame from the face of No. 2 heading was transmitted to distant parts containing explosive gas? I do not think so.
4098. Have you ever considered the possibility of one or two disused bords towards the bottom of No. 1 heading holding gas at the point marked B on the plan? No; I do not think it is possible.
4099. Supposing for an instant that these two bords had contained a magazine of gas, and supposing also that the flame from No. 2, either by itself or through the medium of a dust-laden atmosphere, were transmitted to this distant centre marked B, what would be the results? Well, I consider if that bord there did contain a small accumulation of gas—and it could not be a large accumulation—it would not have added very much to the force of the explosion.
4100. Do you mean it would not have added to it? Oh, yes, it would have added to the force, but not very much.
4101. Did you examine the stoppings between Nos. 1 and 2? Yes.
4102. Did you find the first and second stoppings at all injured? Yes; the first and second were blown to No 1.
4103. You mean to say that No. 2 stopping has been blown from No. 2 towards No. 1? Yes.
4104. Is that against the theory of a separate centre of explosion being in No. 2 abandoned bord, off No. 1? Yes.
4105. Had an explosion taken place in this second abandoned bord, in what way would you expect to see the force of such explosion expend itself? I should expect to see the stopping blown in the opposite direction.
4106. Did you examine the workings marked A, to the west of the main tunnel? Yes.
4107. A little below where the horse is at present lying, did you observe the entrance to some abandoned bords to the left, and going back towards the whin dyke? No; I did not observe that.
4108. Did you observe anything in these workings to lead you to believe that gas had existed and exploded in these two abandoned bords? No; I did not.
4109. Had a separate explosion taken place in the bords that I refer to, a little to the west of where the horse is lying, what effect would you expect, or where would the force have expended itself? It would have gone down the tunnel.
4110. And did the force not go down the tunnel? Yes; a certain amount went down the tunnel. But there would have been other evidences. This horse and man would have been blown through the stopping in a different direction—exactly opposite—and the props in that district would have shown some evidences of the explosion.
4111. Did you observe whether this horse showed evidence of burning? Yes; the hair was slightly singed.
4112. Not charred? No; not charred.
4113. *Mr. Neilson.*] You measured the air when you went in the second day? Yes.
4114. How much air did you find passing in the intake? I cannot give you the exact measurement from memory; but there was upwards of 44,000 feet going into the tunnel, and upwards of 80,000 going in the returns.
4115. Is there any probability of an explosion having taken place in the direction of the western return? No.

Mr. J. Evans. 14 May, 1887.

4116. Supposing there had been an explosion there? Well, Mr. White would not have come out alive; neither would there be a furnace there to-day. All these stoppings would have been blown into the main tunnel. By the time the force reached the western district it had expended itself, and was unable to do any damage.

[Note.—In reply to further questions as to the course of the explosion the witness indicates the course on the special plan.]

4117. It would take a large amount of gas to vitiate 12,000 feet of air? Yes.

4118. When you entered the mine on the Thursday you examined these bords off Nos. 1 and 2 and found no gas? Yes.

4119. I suppose you had no difficulty in getting volunteers for exploring parties? Well, if I were to give my opinion I should probably offend. I do not consider I had the proper assistance I ought to have had on such an occasion at Bulli.

4120. Did you bring men with you from Mount Kembla? Yes.

4121. How many? I brought seven men with me.

4122. *Mr. Hilton.*] You have said you would fire shots with a red-hot wire, Mr. Evans? Yes, it is much preferable to tilting the lamp.

4123. I see that you said in your previous evidence that even the use of a red-hot wire might cause an explosion? Yes; that is true.

4124. To your knowledge, is a red-hot wire the best means yet discovered of firing shots? Well, it is a comparatively safe means; but it is not perfectly safe, of course.

4125. *Mr. Owens.*] If gas existed in any part of the mine, and yet not visible to the eye, would it explode in contact with a naked light? It would probably explode if the air was vitiated with coal-dust, or overheated with a shot.

4126. You think it improbable that gas could have accumulated in these abandoned bords that have been mentioned? Yes; I do not think it at all likely.

4127. You have stated that you had not the assistance that you would have expected on the occasion of the explosion. Were you refused assistance by any one? I consider that the spirit and energy that should have been displayed on such an occasion was wanting.

4128. Were you offered assistance? I was offered assistance, such as it was; but I may say that it was with great difficulty I could induce the men to explore the mine when I made up the first party. Taking into consideration the small amount of damage done in Bulli mine, the bodies ought to have been out much quicker than they were. We could travel as fast as we could put the stoppings up; but the indifference displayed by some of the men literally shocked me. Even the presence of death did not seem to nullify their bitter feelings, and I was horrified to hear one man, turning over a body, exclaim, "I wonder if this is a white-leg or a —— black-leg." And that man's name is Poppett. He had a brother in the pit.

4129. *Mr. Jones.*] Was that expression used in your hearing? It was.

4130. I am sorry to hear it. But as to this apparent hesitancy in entering the mine—might not that be in consequence of the men being unacquainted with gas? Well, looking to the evidence given at the inquest, they seemed to be pretty well up in such matters.

4131. Is gas usually found in the Illawarra mines? It is found in that district, I believe.

4132. But that district is a very limited one, is it not? Yes.

4133. Then only a few men could have had experience of gas in that particular district; might not that be a reason for the feeling of apparent absence of feeling you speak of? Well, perhaps a small amount of it might have arisen from that; but I consider that with competent men to direct search parties they should have no fear; they should have had sufficient confidence in myself and Mr. McCabe to direct the search parties.

4134. I am not doubting your word, Mr. Evans, but would it surprise you to hear that one man offered his services and the overman turned away and refused to speak? No; I know there were a number of persons there whose services I would not accept if I were in the overman's position; that was not the time to go into the mine and find fault; I went there to save life if possible, and I could not get assistance.

4135. I do not doubt that; but we have it on the sworn evidence of individuals that they offered their services, and the management refused to recognise them? I can understand that; while there was a kind of assistance that would have been invaluable, on the other hand there were scores of offers from those who could be well spared; that is, they could do better without them than with them.

4136. That is quite possible; but why cast wholesale censure upon those individuals for not offering their services? I am not condemning the whole body of the men; some of them conducted themselves admirably, and stayed there from the time of the explosion till the whole of the men were got out; but I am sorry to say the majority of them displayed indifference.

4137. Do you speak of your own knowledge? Yes.

4138. That they were indifferent as to rescuing those in the mine—is that what you mean? Yes; that is my impression.

4139. You have stated that you believe the explosion would have been perfectly harmless if it had taken place in a wider area, where it would have had room to expand? I do not say it would have been perfectly harmless, but it would not have been so destructive in its effects.

4140. Considering that the workings in No. 1 or Hill End district were so limited, and knowing that everything depended upon a constant supply of fresh air to these workings, are you still of opinion, having in view the doors which regulate the ventilation in that part of the workings on the main tunnel, that it was perfectly safe to work with naked lights in the bords off No. 1 and No. 2 headings? Yes; I consider it was.

4141. What would be the effect of that door being propped open for a short time, that is, the door on the main tunnel, past No. 1 and No. 2 headings? The effect would be to cut off the air from Nos. 1 and 2.

4142. Then, as a measure of protection, would it not have been better to cause these men to work with safety-lamps in the bords referred to, in view of the whole of the circumstances? It would have been better, in my opinion, to put that division of the workings on an independent split by putting an air-crossing over the main tunnel, and doing away with that door altogether.

4143. Which would have contributed much more to the safety of the workings? It would have given a constant supply to No 1 and No. 2 headings, instead of an intermittent supply.

4144. That being your opinion, do you not think it would have been better to have no bords turned off at

No.

No. 2 heading, and so make it a clear return for the time being? Yes; it would have been better to work on the panel system; the bords should be on the intake.
4145. Are you of opinion that all return airways ought to be travellable? Yes, practically.
4146. Do you consider the Bulli mine a dusty mine? Yes, a very dusty mine.
4147. Do you consider the travelling road to the headings dusty to an extent likely to contribute to an explosion? Yes.
4148. Speaking from your own experience of dusty mines in Wales, does Bulli approach what you would call a dusty mine in Wales? Yes; it is as dusty a mine as any I have seen in Wales.
4149. If these roads were watered with a view of laying or damping the dust, would it reduce the extent to which dust would contribute to an explosion in Bulli Mine? It would lessen the part that dust would play, no doubt.
4150. *Mr. Croudace.*] You state that you consider the tilting of the lamp and the lighting of the fuse by touch-paper is dangerous. Would you consider the lighting of the fuse or squib (say) by an ordinary wax match much more dangerous? Yes; certainly.
4151. What would you think of any one in a mine working with a lamp the top of which he knew to be burnt—not merely the cap of the lamp, but actually the top of the gauze itself, by which the flame is confined? If that person worked for me, or in mines that I have had experience in, he would have been put in prison for six months, or six years, probably.
4152. Just so. And would not the officials have been censurable to have allowed it? Yes.
4153. As a matter of fact such a practice would be dangerous to the men at large? Yes.
4154. Now, you have been asked about the best method of firing shots. Would the method of using water tamping, and firing the shots by means of electricity, be the most perfect system we know of? Yes; I should say so. But I have just heard of a disaster that occurred in South Wales, where Sir Frederick Abel's water cartridge was used. So I disapprove of firing shots in the presence of gas, even by the best methods known.
4155. You were asked by Mr. Jones about the door being propped open between Nos. 1 and 2 headings. Is it likely that the door would be propped open when a trapper boy was stationed there? No; it would not be likely, because it is the trapper boy's duty to keep the door closed.
4156. Would you be inclined to think that the explosion was caused by any door being propped open? No; but if I may express my opinion, I should say that no doors should be on the main hauling plain.
4157. We have had it stated in evidence that a certain witness had had reason to believe that if care was not taken there would be an explosion in this mine. We have also had it stated by the same witness that when he was in charge of a portion of the mine known as the gassy section a door was erected on this western road just at the intake and off the main tunnel, at which there was a flat-keeper attending it; also, a door between headings Nos. 1 and 2, on the main road, where a trapper was kept; also a door on this diagonal cut-through between Nos. 1 and 2 which was attended by a trapper boy, and a door between Nos. 3 and 4 on the main engine brow, at which during his time no trapper was kept. Since then we have had it stated that the door at the western was attended to in a similar manner; also that the doors between Nos. 1 and 2 had trappers attached to them, and that there was a trapper boy attached to the door last referred to on the main engine brow. That was after the strike. Now, looking at these respective conditions, would you consider that there was any improvement in the matter of care and attention as to ventilation in the latter period as compared with the former? Yes; I consider that greater care was exhibited during the latter part, inasmuch as a trapper was stationed at the door between Nos. 3 and 4.
4158. Now, in the same district exactly, and under the same conditions, previously to the strike, there was a ventilating current of between 2,000 and 4,000 cubic feet of air passing through the last holed stenton; since the strike we have it that there was 12,000 feet of air going through. Do you consider that indicates any considerable improvement? Yes, a very great improvement.
4159. Now, to come back to the general system, for any improvement that you may be able to suggest. Do you consider that it would have been better to have double doors at the points I have referred to? No; I do not.
4160. Why not? Because double doors would lose their object on the Hill End plain, unless you could keep one door shut while the other was open.
4161. Would double doors, placed sufficiently far apart so that only one would be open at a time, be more efficient than single doors? Yes.
4162. Would it not have been better altogether, as a matter of proper and scientific ventilation, to have abolished all the doors on the engine plain? Yes; I have said so.
4163. Coming into this western district from the tunnel mouth, would it not be possible to abolish this door at the junction without seriously affecting the Hill End district? Yes.
4164. *Mr. Hilton.*] I understood you to say, in reply to the President, that brattice should have been used in those headings where gas existed? I did not say it should have been; but I say this, that where gas exists, and you cannot dilute it by putting cut-throughs every 35 yards, brattice should be used to carry the air to the face and sweep the gas away in small quantities.
4165. So far as we have been able to ascertain, gas was present in these headings previous to the explosion? If gas was present previous to the explosion I would have put up brattice to dilute it.
4166. These headings have been giving off gas for some time according to the information we have received. That being so, and from your own experience, would you say that brattice should have been used as a means of ventilation? I do not say that brattice should have been used necessarily, but I do say that the gas ought not to have been allowed to accumulate. If brattice was necessary to prevent this it should have been adopted.
4167. *Mr. Jones.*] Respecting the firing of shots, Mr. Evans, are we to understand that as a general rule you would not allow shot-firing, except by persons duly authorized to do it? No, not in fiery mines.
[*The witness withdrew.*]

John Williams sworn and examined:—

4168. *President.*] You are manager of the Coalcliff Colliery, Mr. Williams? Yes.
4169. Did you arrive at the Bulli Colliery shortly after the accident? I did.
4170. About what time did you arrive? About 4·30 oclock.

Mr. J. Williams. 14 May, 1887

4171. Did you proceed into the mine? Not immediately.
4172. When did you proceed into the mine? About 11 o'clock, I think.
4173. Did you proceed to the fall that exists in the main tunnel? Yes.
4174. With what object? I was supposed to be in charge of an exploring party on the Thursday afternoon. I relieved Mr. McCabe, and my object in passing the big fall was to go into No. 2 workings in order to recover as many bodies as possible.
4175. Did you come to my conclusion in your own mind as to the cause of that fall—was there anything singular in its appearance differing from any other fall that you have seen? I did not stop to notice very particularly. My object in going there was chiefly to recover the bodies.
4176. Were you one of the first to reach Nos. 1 and 2 headings? No.
4177. Did you examine the bords off those headings to prove the existence or non-existence of gas? At the time I did not, but in company with two others I noticed that several props in No. 2 heading, and in the bords particularly, were charred.
4178. Did you examine the faces of these bords for gas? We visited all the bords and examined them, but could not discover any gas.
4179. The ventilation would be practically deranged? Certainly.
4180. Would that be a likely time to find gas had it existed? Yes, I should think so.
4181. Did you examine No. 2 heading? Yes.
4182. Did you observe any gas there? Yes, in the face.
4183. How many yards? I cannot say.
4184. Did it fill your lamp? Yes.
4185. Was it of a very quick nature? Yes.
4186. Did you examine the face of the heading? Yes.
4187. Did you satisfy yourself as to whether a shot had been fired there? There was an unusual quantity of loose coal there.
4188. Did you observe any hole as of a shot? No.
4189. Did you observe any traces of fire in No. 1 heading? No.
4190. In No. 2 heading you did see evidences of fire? Yes.
4191. Did you go round the workings of Nos. 3 and 4 headings, also the straight-in and No. 6? I will explain how far we went on the Thursday afternoon. After getting the bodies out of No. 1, and depositing them on the main road, we commenced exploring the main tunnel. Going towards No. 3 we had to put up temporary stoppings. We visited No. 2 first, and at 20 minutes past 10 o'clock we reached the top of No. 3.
4192. Did you observe any bodies? Yes; we saw a man and a boy at the top of No. 2 in the main tunnel, and a man in the face of No. 3.
4193. Were these bodies burnt? I cannot say, as I did not examine them.
4194. Did you pay any attention to the system of ventilation that had been in operation in this district? I saw that the ventilation was sent down No. 1 by a separation door between Nos. 1 and 2, which had been blown away, and canvas had been put up there.
4195. In view of gas being given off in these headings, do you consider that the system pursued was the best that could have been pursued, or does any other mode suggest itself to your mind? I think the system was a very good one.
4196. Do you think the system of breaking bords off No. 2, or the return, in the face of gas being given off in considerable quantities in Nos. 1 and 2 headings, a right and proper system? With sufficient ventilation it would not be considered a dangerous process.
4197. In view of gas being given off in Nos. 1 and 2 headings, is the system pursued for ventilating those headings the best—in the first place, ought gas to be removed as it issues from the coal? I should think so.
4198. What is the best and easiest way to remove gas from the face? By means of brattice.
4199. Had brattice been used in these headings, in your opinion? I cannot say.
4200. Did you see any evidences of it having been used? I did not. The probability is that if brattice had been used there it would have been blown away.
4201. Do you think it would have been prudent to use brattice? Yes; it might have been as well.
4202. Did you satisfy yourself as to the cause of the explosion, or where it originated? I must explain that when I entered the mine I did so chiefly for the purpose of getting the bodies out. I had been three nights away from home, and had not the privilege on the Saturday of going in with the others. Therefore you must excuse me from giving clear and definite evidence on that point.
4203. In a general way, Mr. Williams, is it advisable to have regulating or directing doors upon a main intake or engine road. Would it be desirable to abolish all doors on main roads? Well, I suppose there should be a certain amount of check—for instance, this door would be necessary between Nos. 1 and 2.
4204. Under the present system, no doubt, but does any other system suggest itself to you, or have you given the matter any consideration? [*Question not answered.*]
4205. *Mr. Hilton.*] Had you opportunities of witnessing gas in the mine during your visit? I discovered some gas in No. 2.
4206. Did you discover gas in any of the bords? I did not; and I do not think there was any, although I would not be positive.
4207. Did you find much gas in No. 2 heading? No; there was only a small quantity when I went in.
4208. It is generally understood that since the strike the ventilating current to the gassy section measured 12,000 cubic feet of air per minute. Did you feel any way surprised that an explosion should take place with a current of air like that going to the Hill End workings, considering that you found such a small quantity of gas when the ventilation was deranged? Well, yes.
4209. Does not that lead you to believe that the ventilation must have been deranged previous to the explosion? It may have been. [*The witness withdrew.*]

MONDAY,

MONDAY, 16 *MAY*, 1887.

Present:—

DR. ROBERTSON, PRESIDENT.

MR. O'MALLEY CLARKE,	MR. JONES,
MR. NEILSON,	MR. OWENS,
MR. CROUDACE,	MR. HILTON.

Jacob Carlos Jones sworn and examined :—

Mr. J. C. Jones. 16 May, 1887.

4210. *President.*] You are manager for the North Illawarra Company ? Yes.
4211. Did you visit the Bulli Colliery shortly after the accident ? Yes, about two hours after the accident. I suppose about 4 or 5 o'clock when I got there.
4212. Did you proceed into the tunnel ? Yes ; I went as far as the furnace.
4213. In what state did you find the furnace ? It was in first-class order then—nothing damaged in the slightest.
4214. And was it taking a good current of air ? Yes.
4215. Did you observe whether the ventilation in the tunnel was deranged ? The ventilation in the tunnel as far as the furnace cross-cut was as good as ever it was I suppose—not the slightest trace of after-damp, sulphur, or fumes of any kind.
4216. Did you notice the state of the straight-in tunnel ? I did not visit that part. I simply went in by the left-hand tunnel towards the furnace.
4217. When did you first enter the tunnel and examine it ? The tunnel was not examined until the Commission arrived, I think ; I went in with Mr. Croudace ; that was the first time I examined the tunnel where the falls are. I travelled the other way up to the Hill End district immediately after the accident.
4218. You went down the slacky road and then by the horse road ? Yes ; and in coming from the furnace I met Mr. Ross and accompanied him.
4219. Was the ventilation in a defective state when you reached the main tunnel ? Yes ; it was rather hot, and you could feel the effects of the after damp ; but it was improving.
4220. We have pretty well satisfied ourselves, Mr. Jones, as to the progress made by the different exploring parties along the tunnel. How often have you visited the workings since the accident ? About six or seven times.
4221. Did you examine the working bords off Nos. 1 and 2 headings ? Yes, fairly well.
4222. How often have you examined them ? On several occasions.
4223. Have you found any appearance of light carburetted hydrogen in any of the bords ? No, not in the bords. The only appearance of gas I have seen was in the two headings beyond the last stenton.
4224. Have you found gas beyond the cut-through in Nos. 1 and 2 headings ? Yes.
4225. Did you find gas on every occasion on which you examined for it ? No ; on the first occasion after the accident I did not find any trace of gas.
4226. When was that ? I think it was on the Thursday night—that is, the day following the accident.
4227. Did you carefully examine those headings at that time ? I went in beyond the dead horse in No. 1 heading.
4228. Did you go into the face ? Not actually into the face. I went in as far as the skip and the horse.
4229. Have you, from your repeated examinations, satisfied yourself as to the cause of the accident ? Yes, I have quite satisfied myself. I believe that there was an accumulation of gas in the No. 1 or No. 2 heading, and became ignited by a shot, because there is ample evidence of a shot having been fired in No. 2. I think they must have struck rather an extraordinary quantity of gas at this point.
4230. A blower ? Yes.
4231. Did you hear any sound as of a blower ? No ; I did not hear the slightest sound of blowers anywhere.
4232. Have you satisfied yourself as to the course of the blast ? Yes ; you cannot go wrong I think. The appearance of the charred props, and the dust, and so on, indicate pretty clearly the course it took. It left the back heading and came down through the bords where the cut-throughs are.
4233. One portion travelled through the cut-through into No. 1, and proceeded outwards ? Yes.
4234. And the other portion went down Nos. 1 and 2, through the cut-through, and through the last three bords and out again ? Yes, into the main heading.
4235. Do you think the force of the explosion was intensified by the presence of gas in the atmosphere ? I would not like to say that the force was intensified. Of course the effect was greater in consequence of the dust, but there was not sufficient dust to explode of itself.
4236. Was there sufficient dust, in your opinion, to intensify the action of the gas ? Yes ; there was plenty of dust to intensify the action or the effects of the gas, but not the actual explosive force.
4237. Did you satisfy yourself as to the cause of the death of the majority of these men who were killed at Bulli ? I am quite satisfied that most of them were suffocated either by after-damp or carbonic oxide. All the bodies showed indications of that. One or two, perhaps, were killed by the explosion.
4238. Where or by what means would the carbonic oxide be generated ? By an imperfect explosion—by incomplete combustion of the gas. There might have been gas in the western that imperfectly exploded.
4239. Do you think there could have been much gas ? No ; I don't see how there possibly could have been.
4240. Where, in your opinion, was it confined to ? Simply in the face of Nos. 1 and 2 headings.
4241. Then, in view of the 12,000 ft. of air travelling through Nos. 1 and 2 headings, how would you explain an imperfect explosion of gas ? Well, either too much or too little gas might cause it.
4242. Would 12,000 ft. of air be too little to render explosive any gas that might be there along with the air in the headings ? I think it possible that the gas near the face had not sufficient air.

Mr. J. C. Jones. 16 May, 1887.

4243. But that coming out after the explosion and mixing with such a quantity of air per minute—would that be sufficient to render that amount of gas explosive? Quite.
4244. In which case could there be an imperfect explosion? I can't thoroughly explain everything. This is only an opinion of mine.
4245. Would an imperfect combustion of coal on an ordinary fire produce carbonic oxide? I think so, but am not clear.
4246. Wherein does an imperfect combustion of coal-dust differ from that of an ordinary fire? It would not be a fire; it would simply be intense heat, with no flames.
4247. So is fire an intense heat. You are not prepared to demonstrate your idea on the subject? No; I cannot explain it.
4248. However, you are satisfied in your mind that these men met their death by suffocation, and not by the direct effects of an explosion or flame? Yes.
4249. Did you observe any evidences of charring on the bodies? No; I was astonished at the absence of charring on the bodies.
4250. You have seen the effects of an explosion in Wales, Mr. Jones? Yes, on several occasions.
4251. Have you compared the appearance of men you have seen affected by severe explosions there with the appearance presented by the victims to the Bulli disaster? Yes; in explosions I have seen in South Wales the bodies were charred; but the bodies at Bulli presented no appearance of that kind.
4252. They did not bear such evidences of intense heat? Certainly not.
4253. And from the positions they were found in, combined with the absence of charring, you formed the opinion that they met their death by suffocation? Yes.
4254. *Mr. Neilson.*] You have stated it as your opinion that the explosion originated in No. 2 headings? Yes.
4255. And that there was not a large accumulation of gas there? Yes; I do not see how it could be possible.
4256. And do you think it is possible for any accumulation of gas in any other part of the mine to have supplemented that which originated the explosion? No; not to any extent, at all events, with that amount of air constantly travelling through the workings.
4257. Then how do you account for such a small quantity of gas creating such havoc on the main road a mile away from the seat of the explosion? So far as the western, I would trace the damage to the effects of the blast; but lower down I cannot say so.
4258. In what part of the mine were the greatest effects of the explosion noticeable? In the Hill End district certainly.
4259. On the main engine plain? On the main straight, as they call it, between No. 1 and Nos. 4 or 5.
4260. The inference you draw from that is that the blast went straight from No. 1 and No. 2, and jammed straight up against the wall in the main road? Yes; a portion went outwards, and a portion went inwards. The damage was greater than it would have been owing to the confined space, there being no room, as it were, for the force to expand or lose itself.
4261. In your opinion, if the dyke had not been on one side, and the coal only just opening out on the other, or if there had been room for the explosion to play round, there would not have been nearly such striking effects? Certainly. I am of opinion that if the district had been worked for some years, and several acres of coal had been taken out, the explosion would have spent itself in the immediate district.
4262. *Mr. Hilton.*] Have you been over the fall between the tunnel mouth and the Hill End incline? Yes.
4263. What do you ascribe the fall to? From the appearance of the roof I should say the effect of the explosion on the ropes would do it. The falling of one or two props and the loose stone overhead would cause all the loose timber and debris to come down, and the concussion on the rope would be considerable.
4264. Are you sure in your own mind that powder or dynamite was not an agency in the fall? I do not think it was that, although, of course, it is not impossible. Dynamite would do anything of that kind if it were present.
4265. *Mr. Owens.*] You have been in Nos. 1 and 2 headings, Mr. Jones? Yes.
4266. Did you see any gas there? Yes.
4267. Do you think where gas is generated in headings of that kind it is a wise measure to put brattice there in order that the gas may be swept out? Yes, I do. It is better to do that than for the men to be working in the gas.
4268. You know the door at the junction of the western and the main tunnel? Yes. There was a door there.
4269. Assuming that door was open, what effect would it have upon the ventilation of the Hill End district? It would take some quantity of air away, but not much, because Hill End has a separate return, and that return, I think, was better than the western return.
4270. But there is no separate intake? No. But what I meant to say was that if the western door had been open a much greater quantity of air would not reach in there, because the Hill End is just as near a course for it.
4271. Then, in your opinion, that door not being at the western would make no difference? Certainly it would make a difference; but what I mean to say is, that the door being open would not prevent any air from going into the Hill End.
4272. Do you think that door being open would enable the gas to accumulate? Yes; it might affect the ventilation so far that it would not go right into the face of Nos. 1 and 2.
4273. *Mr. Jones.*] If I understand you aright, Mr. Jones, your answer is, that the opening of that door would scale the very large current of air going to the Hill End district? Yes. There are certain parts of the western that would not take the whole of it.
4274. I am quite satisfied, Mr. Jones. I suppose during your experience you have observed very dusty mines in the old country, and I think you have already stated that you do not consider Bulli a dusty mine? No; I do not.
4275. Then, looking at the very limited area of Nos. 1 and 2 workings (the headings), do you think it was possible for a small accumulation of gas in these headings to work the amount of destruction you noticed in the mine? Yes. I have satisfied myself as to that; the strain on the ropes and other things would have an indirect effect.

Mr. J. C. Jones. 16 May, 1887.

4276. But do you think it could have arisen purely from a gas explosion unaided by dust? Yes, unaided by dust, certainly.
4277. If this door opposite Nos. 1 and 2 and that on the diagonal road were open, would that have a serious effect upon the ventilation of these workings? Yes. It would virtually shut off the ventilation so far as the face of Nos. 1 and 2 headings.
4278. Have you considered how far the fact of these doors being open would contribute to the explosion? It is possible that the doors being open the gas would have time to accumulate, and then if they were shut again, and the current being restored, it might carry the gas on to a light, but I do not think it is probable.
4279. Do you think it a wise mode of working to allow the bords to be so near the explosing headings, which are known to give off gas? I think in all cases the headings should be a good distance ahead of the bords.
4280. That is a principle approved of by mining experts generally? Yes.
4281. That they should be at least 100 yards in advance of the bords? Yes. But I do not say that length. In this case, at Bulli for instance, there may have been some delay owing to this dyke. I suppose they drove the headings as fast as possible.
4282. I think you have already stated that Nos. 1 and 2 headings should have been bratticed? What I mean is this, that if gas showed in the lamp, rather than have the men work in it I would put brattice there.
4283. That is the custom pursued in the old country? Yes.
4284. Do you think it right and proper to allow workmen to fire their own shots? Do you mean generally speaking, or only where gas exists?
4285. Where gas is known to exist? I do not think it is advisable to use shots at all while the men are in where gas is generating.
4286. In going up No. 1 heading, did you observe one or two abandoned bords to the right? Yes.
4287. Were these bords, to your knowledge, driven up to the dyke? I really do not know. I did not go up there.
4288. If you were told that these bords were driven up to the dyke, would you consider that a likely place to find gas—near the fault? I do not know. I could understand it being given off.
4289. Do you think these disused bords should be securely walled off? I do not think so, if they generated gas, unless you stowed them up completely.
4290. Does the Act provide for such a measure? I do not think so.
4291. It does so provide. Now, we have been told that the men working in Nos. 1 and 2 headings were permitted to do so with unlocked lamps. In your opinion, was that a wise proceeding? No; I cannot say it was; indeed, I think, it was most unwise for the men to take unlocked lamps into the mine.
4292. The law provides, I think, that some authorized person shall be put in charge of the lamps, and that no person shall be allowed to take a lamp into the mine unless it is locked? Quite so; and that is why I say the men should not have done it.
4293. Was it a violation of the rule to give the men unlocked lamps? Yes; I should say so.
4294. In your experience of mines that have generated gas, and where doors are required to be frequently opened for trains to pass through, is it not usual to duplicate or double the doors? Yes, if it is a very important place.
4295. Then, having in view the small area of the workings of Nos. 1 and 2, which you have already described as being very limited, do you think that double doors would have answered a good purpose as a precautionary measure opposite Nos. 1 and 2 headings? Yes, I do.
4296. *Mr. Croudace.*] Did you examine the workings from the Hill End district right round from the Western, Mr. Jones? I did.
4297. Supposing the first explosion to have taken place in No. 2 heading, did you in travelling round see any signs of a second explosion having taken place? No, I did not.
4298. Do think it possible that there was an accumulation of gas in any portion of the old workings? No, I do not think so, in that vicinity at any rate.
4299. You think there could not have been any accumulation of gas in any of the old workings west of the dyke? No; I think not.
4300. Supposing there had been any accumulation of gas there, what would have been the probable effect upon the main tunnel in the western district? It would probably have caused a complete wreck.
4301. Would it have affected the furnace there? Yes.
4302. Therefore you do not think there could possibly have been any accumulation of gas in any other part of the workings, so far as the effects can guide you in forming an opinion? No.
4303. Looking at Nos. 1 and 2 headings, and seeing that there are bords broken away in No. 2 heading, and that there has been an acknowledged accumulation of gas in the face of No. 2, do you think it was prudent to allow those bords to be worked with naked lights? No; I do not think it was.
4304. Looking at the positions of Nos. 1 and 2 headings, and Nos. 3 and 4, do you think it was advisable to have had these pairs of headings so near to each other? I do not think they are near—they are about 2 chains apart.
4305. Now, with regard to these doors, you have stated that it would be better to duplicate them. Supposing single doors to be in existence and a trapper to be kept at each of them, do you regard that as being as great a precaution as could possibly be taken to prevent these doors being left open? Certainly. The doors would not affect the ventilation if they were only opened while the trains were passing through.
4306. Assuming this accident to have occurred between 2 and 3 o'clock in the day, is there any probability of that door having been left open by the trapper boy, or by any one under any circumstances, a sufficient length of time to allow the gas to accumulate in Nos. 1 and 2, and therefore to cause the accident? No; I do not think so.
4307. Now, if you notice, there is a small pillar of coal between these headings, Nos. 1 and 2;—would it be possible to have two doors there, on that road, and at the same time allow five or six sets to pass through? No; you would lose the advantage of having two doors; unless one could be kept shut they would require to be 30 or 40 yards apart.

Mr. J. C. Jones. 16 May, 1887.

4308. As a matter of ventilation, would it not have been better to have abolished all these doors in the main intake, and to have ventilated the district by scaling doors in the return? Certainly, that would have been a more precautionary measure in a case of the kind.
4309. Did you examine the big fall near the mouth of the main tunnel? Yes.
4310. Did you see any indication of fire there? I think I saw some charred timber there.
4311. Did you see any signs of explosives being used there (other than gas) that might have shattered the stone? No.
4312. You saw nothing but a heavy fall of the roof, caused, as you think, by the explosion? No.
4313. In the firing of shots would you consider it a desirable practice to tilt the safety lamp on one side in order to light the touch-paper by the flame up against the gauze? No; I think it unwise to do that.
4314. Going further than that, what would you consider the state of matters where a miner would work in the presence of gas with the top of his lamp burnt out? It would show great ignorance, and I think it would be folly on the part of any man to do such a thing.
4315. Supposing that the deputy or other person in charge, in compliance with a general rule laid down here, had locked a lamp and given it to one of the workmen, and the man specially asked him what he was to do in the event of the lamp going out, whereupon the deputy unlocked the lamp and allowed him to take it in unlocked—what would you infer from that? I should think the official allowed himself to do a wrong thing in order to oblige that man. [*The witness withdrew.*]

John M'Kenna recalled:—

Mr. J. M'Kenna. 16 May, 1887.

4316. *President.*] We understand you wish to say something by way of supplementing your former evidence? Yes; I have it here.

[The witness had prepared a statement of the views he desired to offer by way of supplementing his former evidence as to the cause of the accident, and this statement he read, as follows:—"As to the singeing of horse at foot of incline, in dealing with this subject I must begin with the flame at the far end of the gassy flat, and describe its outward course. At the time of the explosion I believe there were nearly 2,000 cubic feet of gas in No. 2 heading (inside the caution-board), and that there were over 3,000 cubic feet in the disused workings in the old left-hand headings. My reason for supposing that there would be over 3,000 cubic feet of gas in these disused workings is on account of them being at a higher level than Nos. 1 and 2 headings; and during the strike the ventilation was reduced to a minimum. While the ventilation was in this low state the gas would naturally find its way into these disused workings; and after the ventilation was restored this 3,000 feet of gas would still remain there, for this simple reason, that the ventilation does not act upon the places in that heading.

When those two quantities of gas exploded the volume of flame would be equal to 40,000 ft., the temperature of which would be nearly 1,500 dgrees Fahrenheit, and the destructive power would be equal to about 1,340 lb. of blasting powder. Allowing that half this volume, namely 20,000 ft., came direct from Hill End, and that the other half took the western course—such was the case, as I showed you a sample of coke half-an-inch thick, and nearly as large as my hand, which I took off a prop in the western, this being a proof that the fiery blast was in the western district—we would have, coming from Hill End, a volume of flame 20,000 ft., with a destructive power equal to about 670 lb. of powder, rushing headlong outwards and leaving its first victim on the turn of No. 3 heading. The second indication of its course was on the flat, where the skips were blown outwards, and one full skip was blown outwards on top of a little boy. About 160 yards further out were the lads Ralph and M'Kay, and on the bank-head were four or five men and two lads, all of whom were frightfully burned. The next forms of life in the course of the blast were the boy and horse who were within a few yards of the tunnel mouth. The fiery blast was almost exhausted when it got this length, and the tunnel being high and wide at this point the force of the blast knocked the boy down, and the almost exhausted flame passed over without injuring him; but the horse, whose height was near to the roof, got singed about the tail, mane, eyelashes, and other superficial parts. The horse is a living proof that the quantity of gas fired was so great that it did not exhaust itself until it became lost in space outside the tunnel.]

4317. *President.*] Can you speak positively of the state of the ventilation of the mine before the strike? Not of my own knowledge.
4318. Very well, you can make any statement you please to supplement your former evidence as to the state of matters before the strike? Very well; I say there were no doors or screens erected for regulating the air current in the workings of the gassy section. I was in there with Mr. White previous to the explosion.

[NOTE.—Witness was shown the position of the doors on the plan. But he was understood to explain that in his opinion these doors did not carry the ventilation where it was required, and pointed out that one of the places was 40 yards in advance of the air current.]

4319. You say you visited the mine after the strike and before the explosion? Yes, with Mr. White and others.
4320. For what purpose? For the purpose of looking at some headings that were to be tendered for.
4321. Then you observed that the ventilation was insufficient, and that these doors were not properly placed in your opinion;—did you make any complaint of that to anybody? No.
4322. You are a member of the Union, I suppose? Yes.
4323. Did you bring this matter under the notice of the Union? I did not.

Mr. J. M'Kenna. 16 May, 1887.

4324. You believed that danger existed? Yes.
4325. And you also knew that miners have a perfect right to appoint check-inspectors from among their number? Yes. But the law is so evasive in itself that employers are allowed to drive this distance, as I have said, over that prescribed.
4326. I am not talking about that. You found a dangerous state of things there, you say. You know that the miners generally have the right to make inspections of the mine for the purpose of securing their own safety and for other reasons; and I ask, did you bring this state of things to their knowledge with the object of having a proper inspection made? No.
4327. Why have you bottled all this up till now;—why not have brought it out before, when you had an opportunity of averting a great danger according to your own opinion? The management would not have taken any notice of me, and whether the Union would have taken any steps I cannot say.
4328. You waited till an explosion took place, and then you bring these facts forward? Probably my name would have been "Walker" if I had interfered.
4329. Do you believe the gas which you say was in the old bords was ignited? I do.
4330. Would that create great destruction immediately it was ignited, as in the case of No. 2? Yes; if there was anything to destroy about the place.
4331. When I tell you that there was a stopping immediately opposite the place where you suppose the 3,000 feet of gas to have been stored, and that this stopping was not disturbed, do you not think it interferes with your theory to some extent? I assisted to close up four or five stoppings near the place I am speaking of.

[Note.—Witness being referred to the plans says he did not assist to close the particular stopping referred to.]

4332. *Mr. Jones.*] Are you quite sure that the horse you saw showed signs of burning? Yes. I also inspected the Big Fall, where the powder explosion was said to have taken place.
4333. *President.*] With what result? I saw nothing there but what bore the appearance of everything having been blown outwards. I did not see anything to justify the powder theory.
4334. *Mr. Croudace.*] In going down the main tunnel, did you observe any appearance of fire on the road? No, except on the bodies of the persons who were found.
4335. None on the timber? No; I did not observe any on the main incline going down.
4336. *Mr. Hilton.*] Do you know of any defects in the ventilation other than you have already described, of your own knowledge? The ventilation, in my opinion, was not in my way regulated round the working places where it ought to have been. There was good ventilation passing along the main roads.
4337. *Mr. Croudace.*] Then surely it must go into these other places? I contend that it passed along the main roads for a vain purpose. To do its work it ought to have been carried into the bords.
4338. How many bords or headings were driven beyond the prescribed distance? One heading, No. 3. It was over 40 yards.
4339. How many bords? There was one bord a little over 40 yards.
4340. Then are these the only violations of the law in that respect? Yes.
4341. *Mr. Owens.*] Did any of the men working in those places make any complaint to your personal knowledge? I cannot at present recollect that they made any complaint. [*The witness withdrew.*]

John Cavell sworn and examined:—

Mr. J. Cavell. 16 May, 1887.

4342. *Mr. Clarke.*] Are you a miner, residing at Bulli? Yes.
4343. Do you remember the 23rd of March, the date of the explosion? Yes.
4344. Where were you at the time of the explosion? I was with the overman, in the old workings, between the grip and the western district.
4345. What did you observe there first? I heard a loud report about half-past 2 o'clock, and felt a great rush of air from the western; it put out our naked lights.
4346. What did you do? We got a light, and went from the old bord we were in to an old heading where the air was running along, to see if there was any difference in the current of air. We found that it had not changed, and we came to the conclusion that there had been a heavy fall, so we turned back. After going about 60 yards the overman turned to me, and said, "Do you smell anything?" I said. "Yes; I smelt something like powder smoke." He then said, "Let us turn back; some disaster has happened."
4347. Which direction did you take then? We went out of the mine by the grip road, past the furnace.
4348. Did you observe anything unusual at the furnace? No. The furnace-man was there, and he wanted to know what was the matter, as the air was very much greater. He came out afterwards. We met Chalmers, Hope, Scott, and Lang at the bank-head.
4349. Did you go into the mine again? Yes; I was there helping to get the bodies out, on the Hill End Road, and I was in next morning again at the top of the flatt in the gassy.
4350. Do you wish to make any other observation, as to the state of the mine, for instance? I did not take much notice when I was in; I was simply assisting to get the bodies out.
4351. *Mr. Neilson.*] What was the object of your going in the old workings with Mr. White? We were exploring the road through where he was going to make a new return.
4352. Between the furnace and the western district? Yes.
4353. Were men working on the other side? I understood that from Mr. White.
4354. What sort of a road was there where you went? It was over old falls.
4355. Could you hear any men working on the other side? No. We were in the act of trying to get through to where these men were working when the explosion took place.
4356. *Mr. Hilton.*] You stated you were a miner—now, I want to distinguish between a miner and a coal-hewer. Were you a deputy, an assistant-deputy, a wasteman, or what? I was a miner, and signed the rules as a miner.
4357. Were you ever up in the old workings or return air-ways between the furnace and the western previous to that occasion? Not since the strike.
4358. Were you previous to the strike? Yes; I went through from the grip to the western.
4359. Was there a travelling way between the western and the furnace at the time you were in the old workings on the day of the explosion? I cannot say, because I never tried to get there. 4360.

Mr. J. Cavell. 16 May, 1887.

4360. How long before the strike was it when you travelled these return air-ways? About a month before the strike.
4361. You say the object with which you and Mr. White went into the old workings on this last occasion was to mark out a new return air-way;—was there anything amiss with the old air-way that you were endeavouring to find a new one? I cannot say; I understood the old return to be practically closed with falls.
4362. When you travelled this return air-way, as you say, a month or so before the strike, what sort of a road was it? There was a good road then; in fact the return man used to go out that way—it was a near cut out.
4363. Were you met by any smoke or after-damp in the old workings on the day of the accident? I did not notice the smell of it until we got on to the grip road.
4364. Did you go into the mine again shortly after the explosion? I did not go any further than the cut-through that evening.
4365. *Mr. Croudace.*] At any time, either before or after the strike, have you ever noticed any sign of gas in the old returns? No, none whatever.
4366. Did you work with a safety or a naked lamp? With a naked lamp.
4367. And you never had any gas? Never on any occasion. [*The witness withdrew.*]

Richard White sworn and examined:—

Mr. R. White. 16 May, 1887.

4368. *Mr. Clarke.*] You are overman at the Bulli Colliery, Mr. White? Yes.
4369. How long have you been connected with the Bulli Colliery? For twenty-two years.
4370. You remember the explosion that took place on the 23rd of March last? Yes.
4371. Where were you when the explosion took place? I was in the grip—what we call the grip heading.
4372. In company with the last witness, John Cavell? Yes.
4373. Well, what was the first indication you had of anything having occurred? I was in an old bord where I had some work done to meet a place coming in an opposite direction.
4374. A party of men were working towards you? Not at that time. I had come up to this old bord on this particular occasion to see if any falls had taken place.
4375. Well, what was the first indication you had of anything having taken place? I was holding a light to Cavell, when we heard a great rumbling noise and a rush of air, which put our light out.
4376. Then what did you do? We got a light as soon as we could, and went back on the return, and finding that the air was not affected I felt sure that nothing more than a fall had taken place. So we went back again, and worked our way up there; but when we had proceeded about 60 yards I smelt the after-damp a little, and on questioning Cavell I found that he had detected it too. So we made our way back the same way as we came, past the furnace. The furnace was all right, but the attendant was nearly done—exhausted.
4377. When did you go into the mine again? I went in on the Friday.
4378. Just tell us where you went and what you did, Mr. White? I followed Mr. M'Cabe in. I thought I would go up and see if I could be of any use. I proceeded to the Hill End district, and when opposite to No. 1 heading I met Mr. Robbins. I proceeded on, and went into No. 6 heading, to the left, towards the face of the main tunnel, and I discovered a horse and two boys and two men.
4379. Did you see any gas there? No.
4380. Where did you go to next? We went from the Hill End to the western, proceeding along the flat to the overcast, which was blown down, and as I was about creeping under the fall Mr. M'Cabe called me back.
4381. Did you see any other destruction or wreckage there? No. We returned then and made further inspections of all the headings—Nos. 1, 2, 3, 4, and 5.
4382. Do you remember what you observed in No. 1;—did you go into the bords there? Well, I went into work more than for inspection.
4383. Did you go into the face of No. 1? No.
4384. Did you find any gas in Nos. 1 and 2. No; I do not think I did.
4385. Subsequently, did you make any minute inspection of that district? Yes, I did.
4386. Within a week after, say? I think I was in before, but it was within a week after that M'Kenna and the miners went in.
4387. Did you go in at any time with the Government inspectors? Yes, I think I did. I went in almost every day.
4388. How did you find the ventilation? Very bad after the explosion.
4389. On the occasion of your special inspection, did you go into the bords? Yes.
4390. Did you search for gas in any of the bords? No.
4391. Did you go to the face of No. 1 heading? Yes.
4392. Did you find any gas there? Yes.
4393. Was it present in any quantity? No, only slight.
4394. Did you find any in No. 2? Yes; there was more there than in No. 1.
4395. Did you observe anything in the face there? I certainly found something strange on the Friday. I was in there superintending the erection of some brattice, and I saw a lot of loose coal there. I saw that it had been intended to put a shot in. A hole was drilled about 2 or 3 inches in, but the shot had not been fired. I pulled the loose coal away from the bottom, and found that the coal had been holed about 3 feet. This seemed to indicate that no shot had been fired there. A portion of the coal had fallen away at an acute angle from the face. After putting the brattice up I told the men to spread the slack along the bottom, and in spreading this out with my hand I suddenly found an open oil-lamp. Allan Black had put it there in a shovel of coal. I asked him where he got it, and he pointed to the place where he had taken the coal from.
4396. Did you see any indication of a shot having been fired immediately prior to the explosion? I can not say that, because they might have put a shot in on the right-hand side, and that coal might have been blown down by a shot.

Mr. R. White. 16 May, 1887

4397. Have you got that lamp? Yes. [*Lamp produced.*]
4398. I think you said you searched for gas in the bords off No. 2, and that you found none? Yes.
4399. Did you see much wreckage in Nos. 1 and 2 headings? Very little.
4400. Further in—at Nos. 3, 4, and 5—did you notice much? No; I did not see much there.
4401. From your inspection and observation can you form any opinion as to the cause of the explosion? Well, at first I formed the opinion that it was by the action of a shot, but since finding this lamp I do not think so.
4402. And what is now your opinion? That the owner of that lamp was working with it there.
4403. You are of opinion that the gas was fired by some man working with a naked lamp which you now produce, and which you found near the face of No. 2 heading? Yes; and he must have been working close up against the roof, because the coal was not more than 4 feet thick.
4404. After the strike what official was employed in the Hill End district—the gassy section? Millwood.
4405. He was the deputy? Yes.
4406. There was no back deputy? No.
4407. Have you ever had any back deputies in the Bulli mine during your period of office there? No; I do not recollect any.
4408. Did you know Millwood well? Yes.
4409. Was he a capable and careful man? Yes; I considered him a very capable man.
4410. Do you know whether he was in the habit of examining the headings previous to the men going into work? I believe he was; but he had not been deputy very long.
4411. Did you give him instructions? Yes.
4412. And you had reason to believe he did so? Yes; I used to go down to the mine after 6 o'clock, and I only saw him on two occasions there.
4413. Were you aware of headings Nos. 1 and 2 giving off gas? I was aware that they were giving off a little.
4414. You were aware that gas existed there? Yes.
4415. Did you yourself make inspection of bords No. 1 and No. 2? Yes; we never found gas there.
4416. Was any report ever made to you of the presence of gas in these bords? Never.
4417. Did Millwood accompany you on your visits of inspection? Sometimes he did.
4418 Did he on any occasion ever draw your attention to any large extent of gas there? No, sir; every day when I saw him I would ask him how things were.
4419. Did you ever examine the faces of Nos. 1 and 2 prior to the explosion? Yes.
4420. What was the result of your inspections so far as gas was concerned? I never saw any till the Friday previous to the explosion.
4421. What happened then? Hope told me there was a little gas there. He was working in No. 1 heading.
4422. What did he say to you? He said there was a little gas there.
4423. With what object did he say that? To draw my attention to it.
4424 Did you search, and if so, what amount did you find? I had to hold the lamp a considerable time, half-a-minute or so, near the roof, and then it would flash.
4425. How near the face was it? Close to the face. Of course the men being at work there, you know, it would be very slight.
4426. Was bratticing used in any of the headings? No, sir.
4427. Why not? Well, we had never found it necessary.
4428. Did you think there was sufficient ventilation without it? Yes; we had never used brattice all the years I was there. Of course, if we had known what we do now we should have used it.
4429. Did it never occur to you to be necessary to use brattice where gas was given off? Not where the gas was so slight as when I saw it.
4430. Would it not be well to use it as a precautionary measure, even with that small amount of gas? I think not. If we had seen a large amount I would certainly have put brattice there, or recommended it.
4431. Do you know the system that was in vogue among the miners as to the firing of shots? I only know since the accident.
4432. You did not know the practice in vogue? No.
4433. Did you give instructions on the subject? Yes.
4434. To whom did you give instructions? To Millwood. I instructed Millwood to fire all the shots in the bords, and not to allow the men to do it.
4435. And in the headings? Yes.
4436. And you did not know whether he carried out your instructions, or how the shots were fired? No.
4437. Now with regard to the lamps—what instructions were given as to the use of the lamps in the gassy section? Open lights were used in the bords, and safety-lamps in the headings.
4438. Did you give instructions to that effect to Millwood when he became deputy? Yes.
4439. Did you instruct him to lock the safety-lamps? Yes; I gave him positive instructions on that point.
4440. Were you aware at any time that those instructions were not carried out? No; I was not.
4441. Did you see the men working with safety-lamps in those headings when you visited them. Yes.
4442. Did you ever examine the lamps with the object of seeing whether your instructions were carried out? No.
4443. Who would be responsible for the lamps on the back shift? The men themselves.
4444. Where would they get their lamps? At the lamp cabin.
4445. They could please themselves then as to whether the lamps were locked or unlocked; is that so? No; I put him (Millwood) on shift on purpose to lock their lamps for them.
4446. Was he present in both shifts? Yes.
4447. Then he was to lock the lamps on both shifts? Yes.
4448. After he would deliver the lamps to the men on the back shift, who would have charge of that portion of the mine then? There was no official there then.
4449. Then supposing anything went wrong with the lamps in that part, what would the men do? They would have to go back to the lamp house.
4450. Do you know where the key was kept? Yes, in a cupboard there.
4451. As a matter of fact, then, if the key was there the men could unlock their lamps and do what was

Mr. R. White. 16 May, 1887.

necessary to them, and they could either lock them again or leave them unlocked, as they chose? It would be the case, yes.
4452. Have you ever had any large blowers in the gassy section either before or after the strike? Well, no; I have not seen any particularly large ones; but I have seen blowers.
4453. Who was the deputy before the strike? Crawford.
4454. Did he ever draw your attention to any issue of gas—a blower? Yes.
4455. *President.*] Do you remember the occasion, Mr. White? No, I really could not say to a week or two. I should say it was about a month or so back.
4456. What was the nature of his report, or what did he draw your attention to? The largest blower I ever saw there was the one he showed me. As we were going in one morning he said "Stop a moment and I will show you something." He then produced a pipe with a tap attached to it, and he placed this in a hole which he had made where the blower was. He then put a light to the pipe and lit the gas. In a conversation that ensued he asked me to let it burn, as it would be a convenience to the lads, and it would at the same time exhaust the gas. I told him not to let it burn, as although it would exhaust the gas it would eat up the air. I ordered him to put it out. Mr. Ross saw the pipe when he was in with me on one occasion.
4457. Was Mr. Ross shown the gas too? Yes.
4458. Did Mr. Ross give any instructions? I do not know whether Mr. Crawford made the same remark to him about letting it burn. He turned the gas on, and Mr. Ross told him not to make use of it in that way.
4459. Whereabouts was this blower—in what heading? In No. 2 heading.
4460. In what part of No. 2? It was about 100 yards in.
4461. How far would that be from the face, have you any idea—was it beyond the last stenton? Oh, no.
4462. What was the length of the hole? I cannot say exactly.
4463. Do you know what became of that blower? Did it become dissipated, or did you make any inquiries about it? I did not see it afterwards.
4464. Did you have any report made to you about it subsequently? No.
4465. Did you consider it a dangerous blower, or one calculated to have ill effects? No. Of course it would have been better for it not to have been there.
4466. Did any of the men complain of this to you? No, never.
4467. With the exception of the observation made by Hope, did you hear any complaint from the miners as to an accumulation of gas in any of the headings? No.
4468. Did Crawford say for what purpose he put this tap on? No; I believe he just put it on for curiosity.
4469. It has been stated here that he did it in order to convince the management of the presence of gas. You knew that gas existed there? Yes, I never denied it.
4470. Were you unwilling to believe that any large quantity of gas existed, or was any complaint made to you to that effect? No.
4471. Therefore you would say this pipe could not have been put there to convince you? No, sir.
4472. Whenever you saw Crawford, did he say to you what amount of gas existed in these headings? Yes, he did.
4473. What was the purport of his reports as a rule? I told him it was best to report everything he saw. I told him if he saw gas in any of the bords not to allow the men to find it out, and if he found any indication of gas, to put the men on with safety lamps immediately. On no occasion did he report any large quantity.
4474. Were attendants provided for each door on the main road? There were previous to the strike, but not at all times, because the lads were so irregular at their work.
4475. What steps did you take to prevent this irregularity? We allowed the wheelers on several occasions extra money for minding their own doors.
4476. What kind of doors were provided? Single doors.
4477. Do you think single doors sufficient? I do.
4478. Which do you think the best system? Double doors might be necessary in some places, but not at all necessary in others.
4479. If you were asked your opinion what would you suggest as a matter of precaution, double or single doors? I should suggest a single door, unless I saw a particular reason to adopt the other system; double doors should only be used in special places.
4480. As a rule, which would be the better plan to carry out, between Nos. 1 and 2 for instance? I should say a single door ought to answer all purposes if properly attended. It depends a great deal upon which way the heading is turned.
4481. Was the ventilation much improved after the strike? Yes.
4482. Was any alteration made in the system of regulating doors since the strike? No.
4483. The doors were left as they were? Well, there was some alteration made at the western junction.
4484. But not in the Hill End district? No, I think not.
4485. As to trapper boys, for instance? There were plenty of trapper boys after the strike. There was one for each door and plenty to spare.
4486. Then your observation as to the irregularity of attendance refers to a period previous to the strike? Yes.
4487. And since that, so far as you know, they attended to their duties? Yes, I requested Mr. Ross to put on more boys, and we had plenty of them—more than we wanted in fact—which accounts for the destruction of boys in the explosion.
4488. You never use bratticing in any portion of the Hill End district, since the strike? I never used it.
4489. Did you ever make any suggestion to Mr. Ross as to bratticing? Well it has just occurred to me that there was some bratticing used on one occasion in the Hill End district, when we were going through the dyke.
4490. That was about two years ago? Yes.
4491. Have you ever used any since in any of these headings off the main road? No.
4492. Did you ever suggest to Mr. Ross the propriety of using bratticing? No, sir, I did not.
4493. You did not think it necessary? No.
4494. Is there a travelling road between the western and the furnace? Yes.
4495. Is it a good travelling road? I cannot say it is a good one.
4496. But it could be travelled? Yes.

Mr. R. White. 16 May, 1887.

4497. Have you been there since the explosion? Yes, on two occasions.
4498. You have travelled right through it? Yes.
4499. Did you examine any of the places while the men were on strike? Yes.
4500. Did you go alone? Sometimes I was accompanied by men, but generally I went alone.
4501. Did you travel the air-course? Yes, from the Hill End to the return, and from the western to the furnace, and I have travelled twice to a place midway between the western and the furnace, where we got through to the grip. *
4502. Did you ever see any gas in these old workings before or since the strike—any gas at all? No.
4503. Was the ventilation as good during the strike as it was before the strike? No, not by any means.
4504. Before the strike, what quantity of air was travelling round the Hill End district? I think the measurement Mr. Rowan took at the time, gave 2,500 feet; but I cannot say exactly as I did not take a note of it.
4505. After the strike what amount had you in the Hill End district? I think Mr. Rowan told me it was 12,000 feet on two occasions.
4506. Previous to the strike were you working with naked lights in the Hill End district? No.
4507. They all used safety-lamps? Yes, with the exception of the boys on the flat.
4508. Did you use safety-lamps in the headings after the strike? Yes.
4509. In the bords? No.
4510. What reason had you for discontinuing the use of safety-lamps in the bords? Because we had such a quantity of air that we thought it was unnecessary.
4511. Was there any other reason? Well, they are very troublesome to work with; for myself I would as soon be transported as work with a safety-lamp.
4512. You thought that the increase of air from 2,500 feet to 12,000 feet, did away with any possibility of danger from gas? Yes.
4513. When were you last in No. 2 heading before the explosion? On the Sunday morning, three days before the explosion.
4514. There would be no one working on the Sunday morning? No.
4515. Were you in by yourself? No; Millwood was with me.
4516. Then you did not see him any more? No.
4517. Did you find any gas there on the Sunday morning? Yes, a little in No. 1 and No. 2.
4518. Was the furnace man in that morning? Yes.
4519. Then the furnace would be going as hard on Sunday as on any other day? Yes.
4520. How often did you report general matters to Mr. Ross? As often as I saw him, we would talk about something or other in connection with the mine.
4521. Did you report to Mr. Ross about the small portion of gas that you saw on the Sunday morning? I cannot say that I did.
4522. You have stated in answer to Mr. Clarke that you gave Millwood instructions to fire all shots in the bords? Yes.
4523. Was that after the strike? Yes.
4524. And yet you worked with naked lights in the bords? Yes.
4525. What object was there in the deputy firing the shots where naked lights were used? Well, it was to keep the men out of danger as much as possible, there being a number of new hands there.
4 26. You say that it is three months since this blower was shown to you by means of a pipe with a tap attached? Yes.
4527. The headings have been considerably advanced since then I suppose? Yes.
4528. When you first passed through the dyke did you get a large quantity of gas? We had gas; but I would not consider it a large quantity.
4529. Was it as much as you got in Nos. 1 and 2 headings? Yes, I believe there was even a larger quantity then.
4530. Is there any opening in the door at the western—is there any regulator attached to it? Yes, there are two openings.
4531. What size are the openings? I cannot say the exact size; but I should think not less than a foot and a half.
4532. Then there is another place where the rope runs through? Yes.
4533. If that door were propped open, would it do the Hill End district much harm? I do not think so.
4534. Is the return from the Hill End better than the return from the western? Yes, a good deal.
4535. Is there much difference in the respective distances that the air has to travel by these two routes—which is the longest? The western.
4536. The suction is to the Hill End, that being the best return? Yes.
4537. What good is the door then? To make the split for the required quantity per man.
4538. *Mr. Hilton.*] Have you a good knowledge of the special rules of the Bulli Colliery, and of the Coal-mines Regulation Act? Yes.
4539. Was there any one in charge of the door at the western junction? There were two boys and a man working there.
4540. Was there any one specially appointed to open and shut the door for the sets going through? No, not specially; but this man, who was working within a yard or two of the door, attended to it.
4541. *Mr. Croudace.*] Was that part of his duty? Yes.
4542. Then he was specially appointed? Yes.
4543. *Mr. Hilton.*] Were you in the habit of travelling the air-ways? Yes, occasionally.
4544. Was it not your special duty to travel the air-ways? No, I think not.
4545. Rule 8 of the Bulli Colliery rules says: "The overmen shall examine the main air-courses every morning and every evening, and report any defect they may notice to the master-wasteman, who shall remove any obstruction in the air-courses as soon as possible." According to this rule, you see, it is the duty of the overman to travel the returns? Do you mean to travel them right through every day?
4546. The rule says "travel the air-courses"? I examine them every morning by the light at the entrance, and if I found any defect or obstruction to the ventilation, I would set a man to clear it. I should have enough to do if I travelled right through every day from one district to another. 4547.

* Note.—Witness indicates position on the plan, and refers to the bord he was in at the time of the explosion, marked (C).

Mr. R. White. 16 May, 1887.

4547. Have you ever travelled the return air-courses since the strike? Yes.
4548. How long before the explosion? I cannot give you the date; but the furnace-man knows that I did travel them, if you want any one as a witness.
4549. Have you used, or caused to be used, any brattice as a means of ventilation in the gassy section since resuming work after the strike? No.
4550. Do you know the distance from the face of No. 3 heading to the last stenton? Yes; I think it is about 41 yards.
4551. The Coal-mines Regulation Act says: "No place shall be driven more than 35 yards before the current of air without a cut-through, put through, or bratticed up, within 3 yards of the face of such working place." Were you aware when you drove this place 35 yards without putting brattice up that it was a contravention of the Coal-mines Regulation Act? I am aware of the fact; but I was not aware that the place was in so far when it was measured.
4552. Did Crawford ever send any men to you previous to the strike for having their lamps unscrewed? Yes; Woods and Wells.
4553. Did you report the circumstance to Mr. Ross? I think I did.
4554. Have you at any time had a book for the purpose of entering reports as to the working of the mine? No; not previous to the explosion.
4555. Rule 5, section 2, of the Mining Act says: "If at any time it is found by the person in charge of a mine, or any part thereof, that by reason of any cause whatever, the mine, or any part of it, is dangerous, every workman shall be withdrawn therefrom," and so on. Are you acquainted with that clause? Oh, yes. And I would just like to remark that these men you have referred to were never sent back into the same place again. I think all these facts should come out in evidence, because certain witnesses may state what they wish to say, and go no further, although they have probably not disclosed the whole truth.
4556. Did you ever unscrew your lamp to get a light in a place where there was gas? I do not think so. I should be a fool to do so, at any rate.
4557. It has been stated here, Mr. White, that you unscrewed your lamp to get a light a short distance from the working face in a place where there was gas at the time? It is not true; and the man who made such a statement is either a fool or a rogue.
4558. Was anyone specially employed to keep the air-ways in good order? Yes, previous to the strike two men were so employed, namely, Thomas Wilson and Sproule. They had nothing else to do.
4559. Was the system of ventilation employed previous to the explosion the best so far as you know? I could not answer that without comparing the system with some other systems. All I can say is, that it answered the purpose.
4560. Had Mr. Ross any fixed periods for going into the mine, either fortnightly or monthly? No; he frequently went in. Some days he would go in, and some days he would not.
4561. Did any lengthy period elapse at any time between the visits of Mr. Ross, for the purpose of examining the workings? I cannot say; sometimes he would be in two or three times a week.
4562. Were you in the habit of reporting matters connected with the mine to Mr. Ross? Yes.
4563. *Mr. Owens.*] Did the Hill End deputy report to you the presence of gas in these headings, Nos. 2, 3, 4, 5, and 6? Yes.
4564. Did you report that to the manager? Yes.
4565. I understand that you did not use brattice as a means of carrying the gas out of the headings? No.
4566. Were they working in those places with safety-lamps? Yes; no man has ever worked in the headings without safety-lamps since the strike.
4567. Have you ever carried a naked light up to the danger-board? We consider it safe to carry naked lights to the danger-board, but no further.
4568. Did the men use naked lights to go in and out of the mine—that is, take their lights in with them as far as the cabin, and substitute safety-lamps for them? Yes, they usually did; they would blow their lights out.
4569. Where did you find that lamp which you have produced? I found it 4 or 5 yards inside the stenton on a canch. The men were carrying slack coal back from the face of the heading, and I was regulating the slack being thrown down. Allan Black picked the lamp up in a shovel of slack in the face and brought it to me. I called his attention to it directly, and he said, "I took that shovelful of stuff from the top of the canch.
4570. Might not one of the men have taken that lamp there after blowing it out, and placed it on the canch till he was going out again? No; they would under ordinary circumstances leave the lamp with their food.
4571. Was it possible for the lamp to have been blown there by the force of the explosion? It was more impossible I should say.
4572. How is that? How could you fire a lamp in there when the force of the blast came out of the headings?
4573. We are told that the wheeler at No. 2 heading was in the habit of hanging his lamp on the prop that supported the danger-board—did you know that? No, I never saw it.
4574. You knew that the wheeler was in the habit of carrying a naked light? Yes, but he was always told to put his light on the ground and never to take it beyond the stenton.
4575. Were you in this district the night before the accident with a naked light? No. I would like to see the man who reported it.
4576. Did you give the same strict orders to Crawford as you did to Millwood with regard to safety-lamps? Yes, I did.
4577. Are you aware of a lamp being used in the gassy section of the mine with the top burnt out of it? No; but I have heard of it since.
4578. How? I became acquainted with it from the newspaper report of the evidence.
4579. Did Mr. Crawford never tell you of the circumstance? No, never.
4580. Did he never ask you for a new gauze to replace one that was destroyed, and you stated you had no gauze? No.
4581. You say you gave instructions to the deputy to fire shots in the bords in No. 1 heading? Yes.
4582. What instructions did you give as to firing shots in the headings? None.
4583. The men were allowed to fire their own shots? Yes.

4584.

Mr. R. White. 16 May, 1887.

4584. You have stated that you knew that gas existed in these headings, and yet you allowed the men working there to fire their own shots? Well, I do not know.
4585. *President.*] You have said you knew it on the Friday before the accident? Yes, I did, so recently as that.
4586. *Mr. Owens.*] The men in the bords, who worked with naked lights were not allowed to fire their shots? No.
4587. And the men in the headings working with safety-lamps were allowed to fire their shots? Yes. But then these men in the headings were working by contract, and they were special miners—practical men.
4588. Were there no other practical miners in the pit? Yes, plenty. As I have said, I did this for precaution sake, because there were new hands, just to keep them out of danger.
4589. Were they all new hands? Some of them were miners, and some of them were new hands.
4590. Were you aware of the way in which they were firing their shots? No.
4591. Do you think the practice of tilting the lamp to ignite the touch-paper is a safe method of firing shots? I should not consider it a safe method; at the same time I do not consider it very dangerous—not in the absence of gas, or a large quantity of gas.
4592. But in the presence of gas? It all depends upon circumstances. A man appointed to look after a body of men does not necessarily confine himself to one line of conduct. A man must suit himself to circumstances.
4593. We have evidence here that on one occasion, in No. 1 or No. 2 heading, you lost your light; that you came into the heading and asked for a light; and that you went within 6 feet of the face and lit your lamp? It is a wilful lie—a fabrication. I am aware of my light going out. But as a matter of fact there has been nothing in such large proportions as has been represented. I will tell you the reason of this lamp going out. It was a Museler lamp, and these lamps require great care to handle, whether there is gas or not. Unless you are very careful, if you draw them down, they will go out instantly. On this occasion you refer to, a man named Hobbs wanted me to find him another place—to let him go on shift on his own account, because the men in that way were gaining more money. I said I would not shift him, and if he did not like it he could go; and when I was going back my lamp went out. I do not know who it was gave me a light.
4594. You were not within 6 feet of the face when you got a light? Certainly not. It was not I who went in that night. One day I was in with Millwood, and as we were going by the danger-board I saw a man going by me with a naked light. He was a man named Browning. I said to him, "Where are you going with your naked light?" He said, "I am going into the mine." I said to him, "Do you not know that the rules prohibit you from going into this place with a naked light?" I was a very good mind to discharge him; but Millwood asked me to let him go that time, as he did not think he would do it again. These men may have seen that light; but there was no light beyond the danger-board.
4595. Who was supposed to lock the lamps of the night-shift men? Millwood.
4596. If I were working in the gassy section of the mine would you, in order to oblige me, unlock my lamp if I asked you? No, but another man might, and I believe he did.
4597. Do you know of your own personal knowledge? No.
4598. You say the reason that the men were allowed to fire their own shots in No. 2 heading was because they were trustworthy and skilful? Yes; I am sure Mr. Ross would not have put them in the headings otherwise.
4599. At the same time you think that they used naked lights in No. 2 heading, knowing that gas was given off in that particular heading? It is my opinion that someone had been in there with a naked light.
4600. Might not that lamp have been taken there for twenty reasons other than working. Is it not possible that it might have been rolled into the road and buried amongst the small coal? It is possible; but I do not think it is reasonable to suppose so, because a man would naturally expect to lose his lamp altogether with a shot going off there.
4601. You say that two men were sent out by Deputy Crawford for having an unscrewed lamp? Yes.
4602. And no record was made of that in a book kept for the purpose? No.
4603. Did you report that to the inspector? No; I have no recollection of it.
4604. Do you not think you ought to have reported it—why did you not put the law into operation? The only reason I can give for that is, that I was too lenient with them. Perhaps one man would have a large family, and perhaps in the case of another there might have been a little spite on the part of the deputy. You cannot punish men without consideration. As it was, I did punish them by not giving them the same place again.
4605. You are aware that such a violation of the Act might be calculated to bring about such a calamity as that of the late disaster? Not at all.
4606. Is it customary to use safety-lamps where there is no gas? Yes, if there is a suspicion of its existence. I have used them plenty of times in England on the mere suspicion.
4607. To close the matter, you did not think it of sufficient importance to report to the inspector? No, I did not.
4608. Did you report the circumstance of this blower, which was shown you by means of a pipe, to the inspector? No.
4609. You did not think it of sufficient importance? No.
4610. In the light now of what has happened, do you not think that bratticing should have been used in Nos. 1 and 2 headings? I can hardly answer the question, because if we had known that the gas was there we should most likely have used it for precaution.
4611. You were pretty well aware that gas was there; in the light of what has happened; therefore, would brattice, do you think, have given a larger measure of safety, putting the question in a general way? It would have been better, no doubt.
4612. Have you a night watchman at the Bulli mine? Yes.
4613. Previous to the explosion had you? Yes.
4614. Did anyone ever report to you that the furnace man, on the night previous to the explosion, went to his work in a state of intoxication? No, that was never reported.
4615. This is a matter I want to understand very clearly, and I want to understand whether any such report was ever made to you? No such report was made.

Mr. R. White. 16 May, 1887.

4616. The watchman did not report to you that the furnace man went to you in a state of intoxication? No, he did not.
4617. You are quite sure of it? Yes, quite sure.
4618. *Mr. Croudace.*] Who is it that lays out and designs the system of work generally at Bulli mine? Mr. Ross.
4619. In opening out this Hill End district from the dyke, did you receive instructions from Mr. Ross as to the points at which you were to start away these headings? Yes.
4620. Do you notice that the headings are turned away quite close to the dyke, within a few yards? Yes.
4621. Then you received instructions from Mr. Ross to turn away the pair of headings, Nos. 3 and 4? Yes.
4622. And the bords in No. 2 heading? Yes.
4623. Did you receive instructions from him to turn away the bords in No. 3 heading? Yes.
4624. Did you ever suggest to Mr. Ross the undesirableness of working away the bords in No. 2 heading for any reason? No.
4625. Not as a reason of economy, as it were, nor because it was a return air-way for the bords working in No. 1? No.
4626. Did you ever give the matter any consideration as one affecting the best interests of the colliery generally? Well, I have a reason myself for turning the bords away. We were so hampered up with rolls that we might get only 10 or 15 yards of coal between each (say), at this heading.
4627. Seeing that gas was known to be given off more or less in No. 2 heading at about the time of the strike, do you not think it would have been better and safer to have left No. 2 heading purely as a return? It would have been better.
4628. Would it not have been prudent, in your opinion, to have run a little bratticing into Nos. 1 and 2? Yes.
4629. Knowing, as you did, that you were meeting with gas in the Hill End district, would it not have been desirable to increase the distance between these headings, so that you could have had two doors between Nos. 1 and 2, instead of a single door? Well, I did not give it a thought.
4630. Do you think now that two doors would be better than one under the circumstances? Oh, yes.
4631. Do you not think it would be better to abolish the main road doors, and place regulating doors in the returns? I should not think it would be best to abolish the doors.
4632. Have you on any occasion, on measuring the air previous to this strike or disaster, found the ventilation affected by any one of these doors being left open? No.
4633. Do you recollect Mr. Rowan and yourself measuring the air and finding it deficient? I do. We stopped at that stenton between the 5th and 6th bords, I dare say, for twenty minutes, and he took the measure of the air three times, and we got the same register every time. I proceeded along the heading, and to my surprise, when I reached the left hand door leading into the return, I found it open. The deputy (Crawford) was standing not 15 yards from it, and I had some words with him.
4634. Well, what did you do? Well, I shut the door, and asked Mr. Rowan to go back and measure the air again. He did so in the same place, and got 1,500 feet more air in the same place.
4635. Therefore the leaving open of that door was the cause of your getting so much less air along there? Yes.
4636. *President.*] You mean to say that 1,500 feet of air escaped through the door on the main tunnel? Yes.
4637. *Mr. Croudace.*] You think it was not the western door? No, sir, it was not.
4638. You say you had high words with Crawford? I told him I would report him.
4639. Had you any reason to believe that the door was left open wilfully? I had strong reasons to believe that the door was left open purposely, because the man had followed us down, and when we got down to this place (*pointing to the plan*) he left us; I went nearly to the stenton before I missed him, and when I came back the door was open.
4640. Was there any misunderstanding or ill feeling between you and Crawford previous to the strike? No; I have no ill feeling against any man.
4641. Did he caution you about being very careful in the Hill End district for fear there should be an explosion? Yes, he did, the last time he was in the mine.
4642. Was that to be taken as a friendly warning or as a vicious statement, in your opinion? In my opinion I do not think it was done in a friendly manner, although it would imply that. It was known there was gas there, and he wanted to make as much of it as possible.
4643. Previous to the strike had you the same system of ventilation in the Hill End district as you have now? Yes.
4644. The doors were in the same position? Yes.
4645. Previous to the strike had you men to attend these doors regularly? Well, no, they were more lax then.
4646. Since the strike have you been careful to have each of these doors carefully and systematically attended? Yes, I have.
4647. Did that arise from a fear you had in your own mind of this warning of Mr. Crawford's, or how was it you came to be more careful than you were before? No; as I have said it was because I had a good supply of boys, and before that there was a deficiency of boys.
4648. You believe that the explosion occurred in No. 2 heading? Yes.
4649. Do you believe there was an accumulation of gas in any of those bords off No. 1? No.
4650. Or in the bords off No. 2? No.
4651. Do you believe there was any accumulation of gas in these workings marked A? I do not think so.
4652. Have you seen any accumulation of gas in the old workings? No, sir.
4653. Have you seen any in the western district? No.
4654. Or any tailing at the furnace? No.
4655. Coming to this lamp you found, do you believe that lamp had any connection with the explosion? It seems to point to that conclusion.
4656. Do you believe that a man was working with it at the time of the explosion? I cannot say.
4657. Did you find or did you hear of a dead body being found at the face of No. 2? No.
4658. Supposing a man to have had that lamp while working, and to have thus lit the gas, do you not think

Mr. R. White. 16 May, 1887.

think there would be some signs of his having been there? I cannot say; he might have been in the act of filling a hole on the right hand side, and he might have been blown a long way from his lamp.
4659. Who were the men who worked in No. 2 heading at the time? Westwood and Crompton.
4660. Do you know where the bodies were found? No.
4661. Do you believe either of them could have had that lamp in the face of the heading when the explosion took place? They might have lit the fuse and ran away, dropping the lamp at the time.
4662. Did you see any fuse there? No.
4663. Does the lamp in any shape or form show signs of having been in a heated atmosphere or great flame, or subjected to a heavy fall of coal upon it? This lamp looked very different when I first picked it up.
4664. Did you have a special man to clean and trim the lamps? No; not a special man. Millwood did the whole of that.
4665. Would it not have been better under the circumstances to have had a man to properly attend to these lamps before passing them into the hands of the deputy? Well, we gave the deputy any assistance he wanted; and there would have been a special man if we had kept on a while longer, but a fresh start had been made at that time.
4666. Would it not have been better to have had a man to clean and feed the lamps previous to their being examined by the deputy, so that the deputy's examination would be a second safeguard as it were? Yes.
4667. Was this never thought of, or did you never suggest it to Mr. Ross? No.
4668. Did you report matters connected with the mine to Mr. Ross every time you saw him? Yes.
4669. If you did not see him, did you take any steps to report? No, not necessarily.
4670. Would it not have been better in the opening out of a gassy mine like this, and particularly since the workings were extended, to have had a regular system of daily reports as to the operations of the colliery, and with respect to gas particularly? Undoubtedly it would.
4671. *Mr. Jones.*] Are you quite sure that Millwood also examined the working places previous to the night-shift men starting work? Yes.
4672. Did you ever hear of fire-damp in the Bulli mine previous to striking the dyke in the Hill End district? Yes.
4673. Did you ever hear of a man being killed in the mine? Yes.
4674. In what district? In No. 2 tunnel, we used to call it.
4675. It was not in the Hill End district? No.
4676. *Mr. Neilson.*] Did you ever on any occasion hear a report as to a blower that could be heard hissing for a hundred yards?
4677. Did Smithers ever report such a thing?
4678. *President.*] Had it existed you would have been certain to have heard of it? Yes, I am sure I should.
4679. *Mr. Clarke.*] Did Millwood ever report to you about having found a door propped open? Yes.
4680. What time was that? It was about two nights before the accident occurred. He said it was the second time he had found that door open.
4681. What door was that? It was the straight-in door.
4682. Did he say how it was propped open? No.
4683. Was it Millwood's duty to see that all the doors were shut, all the lights put out, and everything attended to generally for the safety of the men before he left the mine? Yes.
4684. *Mr. Hilton.*] I think you stated, in reply to Mr. Owens, that the reason you did not give the men in the headings instructions as to firing shots was because they were practical miners and trustworthy men? Yes.
4685. Now, is the man Woods, that was working in No. 2 heading since the strike, and the Woods whom Crawford sent to you for unscrewing his lamp, one and the same person? Yes.
4686. Do you think it was a prudent thing to allow a man to fire his own shots, who had been sent to you by the deputy for such an act as he was guilty of? I see nothing in it. A man may forget himself once, and after a good caution might exercise as much caution as any other man. You cannot punish a man everlastingly for one fault.
4687. Would that explanation apply to No. 6 of the Bulli General Rules? I do not know much about those rules.
4688. Have you never read them? Oh, yes. [*The witness withdrew.*]

Alexander Ross sworn and examined:—

Mr. A. Ross. 16 May, 1887.

4689. *President.*] You are the mining manager of the Bulli Colliery? Yes.
4690. How long have you been manager? For twenty years.
4691. How long has the mine been working? For about twenty-five years; but I could not say exactly.
4692. What mining experience have you had? I have had mining experience as a deputy at home, and in this Colony I have been engaged here and at the Wallsend Colliery.
4693. In what districts were you engaged at home? In Northumberland, Newcastle-on-Tyne.
4694. For how many years in mines that gave off gas? For twenty years at home in mines that gave off gas.
4695. Has it been your practice to give copies of the special rules to workmen? Yes.
4696. Has this practice been rigidly adhered to? Occasionally a man might be missed by accident, but, as a general rule, it was done.
4697. Upon whom did that duty devolve? Mr. White.
4698. To the best of your knowledge did all your workmen receive copies of these rules? To the best of my knowledge they did.
4699. Were the general and special rules posted up in a conspicuous part of the mine? Yes.
4700. And in addition copies given to each man? Yes.
4701. Before opening out the Hill End district of your colliery, did any working place give off gas? No.
4702. At no time? A little was observed on one or two occasions, but it was only a small quantity.

Mr. A. Ross. 16 May, 1887.

4703. Have you ever had a fatal accident from an explosion of gas? Yes; one occurred some seventeen or eighteen years ago.
4704. Since that time has gas been given off? Only on one or two occasions.
4705. In what district? In the old workings.
4706. In what position were they? Going to the south-west from the tunnel mouth.
4707. That is to the right? Yes.
4708. And these workings are now abandoned? Long ago.
4709. Did the gas that was given off in the Hill End section necessitate your improving the ventilation? Yes; but that was not the only cause for the improvement of the ventilation; it was for the improvement of the ventilation of the mine altogether that we made the alterations.
4710. Did the quantity of gas given off necessitate the use of safety-lamps? Yes.
4711. What amount of air circulated in this section under the old system of ventilation by the old furnace? Between 4,000 and 5,000 cubic feet per minute.
4712. Did that go into the Hill End section? Yes.
4713. When the new furnace was started what difference did it make? It increased to 12,000 and 13,000 cubic feet per minute.
4714. Nearly trebled? Yes.
4715. Was your colliery a dusty one? Yes; particularly the Hill End section.
4716. Have you worked in dusty mines in the old country? Yes.
4717. Compared with the mines at Newcastle-on-Tyne, would you consider it dusty? Yes; much more dusty than I have been accustomed to.
4718. Did you consider the dust in the Hill End section a source of danger? I did not previous to the accident consider it so.
4719. Did the mine produce any water? None in that district.
4720. Was it absolutely dry there? Yes, absolutely dry.
4721. Did the dusty nature of the roads in this district necessitate your watering them? We occasionally watered the horse-road.
4722. That only? Yes.
4723. Was this done to secure the comfort of the men and horses, or because of the feeling of danger? Only to secure the comfort of the men, boys, and horses by keeping down the dust.
4724. It was not for the purpose of purifying the air in the workings? Not especially for that.
4725. Had you no danger in view? I had no danger in view. The dust used to fly up upon the axles of the skip and interfere with the lubrication and velocity of the sets, and we used to water the roads to keep down.
4726. What directions did you issue with regard to the use of safety-lamps? That they were to be attended to by the overman, and given out to the men locked.
4727. Did you at any time see whether these directions were carried out? Not exactly. I did not see them actually locked, but I understood that they were.
4728. Did you ever hear anything to the contrary? Never, until the accident occurred.
4729. Previous to the accident, you heard nothing? Nothing.
4730. Did you give any directions as to the manner of firing shots? No special direction; only the shots were not to be fired in the presence of gas.
4731. To whom did you give these orders? To the overman and deputy.
4732. Had they the charge of these safety-lamps? The deputy had charge of them in the morning, and there was a man appointed to clean them during the day.
4733. Did you ever inspect the condition of these lamps yourself? I have.
4734. Were you generally satisfied with them? Yes.
4735. Has it been your practice to converse with the deputies about the districts under their charge? Yes.
4736. Do you know Crawford? Yes.
4737. Was he a careful and capable deputy? I considered him so.
4738. Who appointed the deceased Millwood deputy? I did.
4739. Did you consider him capable? Yes; a capable and careful man.
4740. Did you ever discourage deputies coming direct to you with their reports? I never discouraged them or anybody else.
4741. Did you ever speak sharply, or, to use his own phrase, snub Crawford when he spoke to you? No.
4742. Would you reprove a deputy for bringing the dangerous condition of the mine under your notice? Certainly I would not.
4743. Have you been careful to keep a supply of gauze in stock for the repairing of the safety-lamps used in the mine? Yes.
4344. Do you recollect Crawford informing you that a certain lamp wanted a new upper gauze cap? I do not remember his doing so; he might have informed me, and if so I must have given him gauze to repair the lamps.
4745. Whose duty was it to remedy the lamps when they were defective? It was my duty to see that they had good safety-lamps, and it was the deputy's duty to see that defective lamps did not go into the mine, and it was the duty of the men themselves that they did not use lamps in such a condition.
4746. You say you appointed a man to clean the lamps, would a lamp in that condition be likely to be observed by him? Assuredly it would.
4747. You do not recollect on any occasion Crawford, or any man, bringing under your notice a safety-lamp which had been used in the mine with the upper gauze removed or burnt off? I do not recollect anything of that.
4748. Do you recollect Crawford showing White and yourself a blower with a gas-pipe inserted in it? Yes.
4749. Was it a strong blower? No, it was not a very strong blower. He had put a pipe about the size of an ordinary gas-pipe in it.
4750. What object had Crawford in calling your attention to this blower, and what object had he in fixing the pipe into it? I don't know, except it was to show his ingenuity.
4751. Had you any doubt as to the existence of gas in any quantity in these headings? I knew the coal gave off a little gas in the headings.

4752.

Mr. A. Ross.
16 May, 1887.

4752. Did that convince you that it existed in a large quantity? No, it was not a very strong blower.
4753. What did it convince you of then? Simply that there was a little gas there.
4754. Can you tell us the conversation you had with Crawford on the subject? Well, when I came there he showed it to me by igniting the gas at the end of the pipe, and I told him to do away with the pipe and not to practice that sort of thing.
4755. What reason had you for saying that? Because I did not think it right to light gas wherever it was found, and Crawford said that if it was left burning it would lessen the gas and improve the air, and I replied that there was sufficient ventilation to carry away the gas without burning it.
4756. How long was that before the strike? It might be about six months.
4757. Where did you proceed on that occasion with White and Crawford after seeing the blower? To Nos. 4 and 5 headings.
4758. Had you previously been up to Nos. 1 and 2 headings? Yes.
4759. Did Crawford call your attention to the gas in these headings? I do not think so.
4760. Did he suggest any special means of clearing the gas away from the headings? No.
4861. Would the reporting of danger by any one of the workmen be considered an offence by you? Certainly not.
4762. Would you encourage the reporting of dangers? Yes.
4763. Would you consider it an ordinary workman's duty to report danger directly to you? Yes.
4764. Did you provide report books for this purpose at the mine? No.
4765. In the event of the deputy discovering a dangerous condition of things, what course would he pursue? He would report to the overman and the overman reports to me.
4766. Before the new furnace started you say the safety-lamps were locked? Yes.
4767. How long was the mine at work after the strike? We commenced again about the 10th January.
4768. To work coal? Yes, with a few men.
4769. Were safety-lamps employed in the faces since January? Yes; in the faces of the headings.
4770. Were they used in the bords? No.
4771. When was the use of safety-lamps discontinued? We discontinued the use of safety-lamps in the bords after the strike, when we started the new ventilating furnace.
4772. Did you alter your orders relating to the locking of the lamps? No.
4773. Did you relax your orders in any way? No.
4774. Were you aware of the lamps being used unlocked? No, I was not.
4775. Are you aware that your orders for the locking of lamps extended to those used by the night men? They ought to have extended to all lamps.
4776. Who was appointed to look after the night lamps? The deputy, as they were going in.
4777. Did you provide a night overman or deputy? No.
4778. In the event of the lamps going out where would the men go to get them relit? No provision was made for that.
4779. In the absence of any provision where could they have gone? Only outside the mine to get their lamps re-lighted.
4780. Are you aware whether any man ever did come outside for that purpose? I do not think so.
4781. After the new furnace was started you say that naked lights were used in the bords? Yes.
4782. Was it done with your orders? Yes.
4783. Can you explain to us the reason of that order? Because there was no gas in these bords even before the furnace was started.
4784. Did no gas exist in these bords immediately before the strike commenced? No, not in the bords; but there was a little in the faces of Nos. 1 and 2 headings.
4785. Were there any sign of gas in Nos. 3, 4, 5, and 6 headings? A little was drawn off the faces of these headings occasionally; but there was none in the bords.
4786. So gas was coming off more or less in all the headings of the Hill End district? Occasionally.
4787. Do you mean since the strike? It was only reported to me on one occasion since the strike, and that was a small quantity in No. 1 heading.
4788. Before the new furnace was started the bords in this district were worked with safety-lamps, and you have since discontinued their use? Yes.
4789. Did you depend entirely upon the increase which the new furnace gave to the ventilating current? Not entirely; one reason was the absence of gas, and the other the largely increased ventilation.
4790. Do you think it is wise to place too much reliance upon increased ventilation when gas is being given off? Where it is being given off it is perhaps not wise.
4791. Do you think that the gas coming out of Nos. 1 and 2 headings was sufficient to foul the nearest stenton between them? A large quantity of air was employed to dilute any gas that came off as far as I was aware of, and it would require a large quantity of gas to foul the air in that stenton.
4792. The fresh ventilating current passed up No. 1 heading into No. 2, supplied the working bords of No. 2, and after entering the main tunnel, supplied the bords of Nos. 3 and 4, as well as the faces of those headings, then went into Nos. 5 and 6 headings, and afterwards passed into the return. Was that its course? Yes.
4793. Was that a judicious system to pursue? Yes, under the circumstances.
4794. In view of gas being given off in Nos. 1 and 2 headings, was it a judicious system? Yes, considering the small quantity of gas given off.
4795. But, suppose a large quantity was given off? No, it would not be.
4796. Would it not have been better, in view of gas being given off in these headings, to pass the return air directly into the return? Yes, if large quantities of dangerous gas were given off.
4797. Do you consider, in view of the amount now being given off in Nos. 1 and 2 headings, and the occasional occurrence of blowers in No. 2, that it was a wise system to pursue, to carry the air that supplied No. 2 heading afterwards around to the bords off it, which were worked with naked lights? Yes, in consideration of the quantity of gas given off, and the experience we had in that district.
4798. Did you adopt any special means to free the faces of these headings, Nos. 1 and 2, of gas? We adopted the means of driving stentons through it at short distances.
4799. Did you adopt any other means? No.
4800. Did it not occur to you that bratticing ought to be put in these headings to sweep away the gas as it was made? No, not with the quantity of gas we have experienced.

Mr. A. Ross. 16 May, 1887.

4801. In view of gas being given off in such faces as these, was it obligatory for you to use bratticings? Not under the circumstances, because I did not think the quantity of gas sufficient to require that. The quantities found in these headings was small.
4802. Have you frequently examined these places? Yes.
4803. And have you had daily reports of their condition? Yes.
4804. And you came to the conclusion that the quantity was too small, considering the largely increased ventilating current that the new furnace gave, to induce you to put in bratticing? Yes; I did not think it necessary.
4805. Are you conversant with the manner adopted for the firing of shots in these places? No.
4806. Have you never inquired? No.
4807. If you were informed that in portions of this district where gas was given off that shots were occasionally tamped with dry coal or dust, and that fuse was inserted in it and fired by touch-paper lighted from the flame of a Davy lamp at the gauze, would you consider it a right and proper means of dealing with shots? No, the tamping ought to have been damped, and in firing a shot a wire should be put through the gauze of the lamp.
4808. Do you consider that a safe means? Yes, as safe as any other, and it is a less clumsy way of lighting shots.
4809. Respecting a system of ventilation, the air is directed by doors fixed in the main tunnel. Do you approve of doors in a main tunnel, or on engine roads? Not if it can be obviated, and the mine well ventilated in any other way.
4810. Could it have been obviated in this colliery? Not very well.
4811. Would special provision require to be made in the Hill End district? Considering the distance I expected to go, and the limited coal-field, I considered the doors the best plan to adopt.
4812. There is a door in the main tunnel? Yes.
4813. Is there anything to recommend a single door in the main tunnel—would double doors not be better? Certainly, double doors are better than single ones, but on account of the limited field of coal which we are likely to expect from former experience, and as it would occupy such a large space for double doors, I thought the present system was equally good under the present circumstances.
4814. How many skips apart would the doors require to be? To let a train through of twenty skips not less than 6 feet for each skip.
4815. How much would that be? That would be 120 feet.
4816. So you would have required a space of 120 feet to be of any practical value? Just so.
4817. For that reason, and owing to the limited and very troubled nature of the coal-field, you did not deem it expedient to adopt the double door system? No, I did not.
4818. Did you provide attendants at those doors? Yes; boys were kept at the doors.
4819. Did the opening or shutting of the doors tend to weaken the ventilation in Nos. 1 and 2 headings? Probably it would when they were open.
4820. How long would they be open when the sets were coming from Nos. 1 and 2 headings? About a half or three-quarters of a minute.
4821. There were twenty skips in a train, and how many trains would there be in a day? I could not say exactly, probably eight or ten.
4822. So the opening of the door to allow trains to pass would only occupy a few minutes during the day? Yes.
4823. In providing attendants for these doors are they peculiarly liable to be injured? No.
4824. As a matter of fact, do these doors get injured by the skips? Not that I am aware of.
4825. Are you aware whether any gas existed prior to the accident at any time in the abandoned bords off No. 1 heading? I am not aware of any gas having existed there.
4826. Do you know whether they were ever examined. The first two bords that were broken off No. 1 heading which had been worked back to the dyke have been abandoned. Do you know whether they ever contained gas? No, they did not.
4827. How do you know? Because I was in them just before they were stopped, and they had not contained gas for a long time previous to that.
4828. Did they ever give off gas? Yes, when they neared the dyke, but not since.
4829. How long is it since you were in them? I cannot say how long it is, but I know that they only gave off gas when they were near the dyke.
4830. Then the whole current passed the mouth of these bords? Yes.
4831. Was gas likely to accumulate in them considering their position? I do not think so.
4832. Have you examined all these bords to ascertain whether any gas which came from the headings did exist there, and to see if any of them formed a separate centre of explosion, and did you also notice the stoppings in this locality? I examined the stoppings that were blown away from Nos. 1 and 2.
4833. Had gas existed in these two abandoned bords, would you expect these stoppings to be blown through in that way? No; I would expect them to be blown in a contrary way.
4834. Did the western workings give off any gas? No, none at all.
4835. You have often inspected the mine subsequent to the accident? Yes.
4836. Have you come to any conclusion as to the cause of the lamentable occurence? I have come to the conclusion that the explosion occured in No. 2 heading.
4837. On what do you base that conclusion? From the probability of a shot which was fired there having ignited the gas.
4838. An overcharged or a blow-out shot? It might have been an overcharged shot, I do not know.
4839. But you have come to the conclusion that the gas was ignited then? Yes, but by what means I could not determine.
4840. And that the loss of life was caused by that explosion? Yes.
4841. Do you think it likely, considering the limited reservoir for the existence of gas in No. 2 heading, that coal-dust has played an important factor in the explosion? I think it must have done, and I do not think that the quantity of gas which exploded there could cause the destruction without some other cause to help it, such as coal-dust.
4842. Have you ever examined a colliery after an explosion? I never did.
4843. Did you expect to find the workings and plant more severely wrecked than they are? No; I did not expect to find them so badly wrecked.

4844. How do you account for the large fall in the main tunnel? I can only account for it by the force of the explosion blowing out the props.
4845. Did it ever occur to you that dynamite or powder had been used to bring this fall down? No, it did not occur to me.
4846. Before the accident were you aware that the roof or a portion of the roof was resting upon the timber sets there? Yes, I believe it was.
4847. In which case if some of these sets had been displaced do you think that alone would be sufficient to cause the fall? Yes.
4848. Do you think that the wire ropes attached to the timbers had anything to do with the distribution of the fall? In some cases it might.
4849. Do you attribute this fall to any extraordinary cause? Well, there is something very extraordinary about it, from the fact that some of the timbers are blown in one way and some another.
4850. I ask whether the fact that the ropes being connected with the sets might not account for that? In some cases it might, but not in others.
4851. Suppose a fall took place in the centre of a large quantity of timber which carried the ropes down to the floor, would not that have any effect upon the manner in which the timbers were found? Yes; wire ropes were attached to the timbers, but there are props to which the ropes were not attached that are driven inwards.
4852. Are you aware whether a large fall causes any displacement of air? Yes; but that could not have done so.
4853. Have you ever heard of falls of roof causing great destruction to property and air-ways? Yes.
4854. Is that fall not sufficiently large to do so? No, it is not.
4855. Do you think or have you any reason to doubt that your overman, Mr. White, would conceal from you any complaint made by the men to him? I have no reason to doubt that he would or to think that he would.
4856. Has he ever reported to you any complaint made to him by the men as to the condition of the safety-lamps? No.
4857. If your orders to White with regard to the safety-lamps had not been carried out, would you consider that he has been guilty of negligence? Yes, if he knew it.
4858. So far as you are able to judge, do you consider that this accident has been brought about by the unlocked state of the lamps? No, it has not.
4859. Some evidence has been given to us as to the correct interpretation of rule 6 of your engagement rules. Do you know whether this rule ever prevented a man from making any report to you, I presume you know the rule, it is this: "*Interference by employees.* Any employee interfering in any way with the orders issued by the Colliery Manager or his overman for regulating the work of the mine, shall be liable to dismissal without notice." Did that rule prevent any man from complaining to Mr. White or yourself? It ought not to have done.
4860. Did you ever issue any orders for men not to report to you? Never.
4861. In which case would the rule read as the men have indicated? I do not see how that rule can be construed to mean the interpretation that the men put on it.
4862. Did any man ever ask you to explain whether it bore that interpretation? No; I do not remember any man asking me about that.
4863. Try and recollect? I do not remember if any man did so; I would certainly say it does not mean that in English.
4864. What does it mean? It means that the men would not be allowed to interfere with the management or discipline of the colliery.
4865. Is it necessary that strict discipline should be maintained? Certainly.
4866. Is it necessary that men should interfere with the discipline of the colliery apart from the management? I do not see that; it is only to assist in maintaining discipline.
4867. Would a report by any workman be construed by you to be an interference with the management? Certainly not?
4868. You cannot construe this rule to read as the men read it? No; there is nothing in it to imply that interpretation.
4869. Did you hear anything of this construction of this Rule 6 prior to the accident? No, I never did.
4870. Had you heard it would you have put the men right on it? Certainly.
4871. *Mr. Neilson.*] You stated, Mr. Ross, in the beginning of your evidence, that in the old workings you found gas—was that the time you worked through the dyke or afterwards? It was while we were driving the headings, the gas came off a roll in the heading.
4872. Was it permanent or temporary? It was temporary; it would last perhaps one day only.
4873. Did it have a chance of going off into the bords? No.
4874. Have you been through the old workings at all since that? Yes; many times I have been through these places with a naked light.
4875. Then there could not possibly have been any gas there? No.
4876. In reference to the locking of the lamps, in giving your officials instructions I presume that each was supplied with a copy of the rules? Yes.
4877. Would a manager consider it necessary to verbally detail the duties out to his officers? Not so far as the rules would relate to them; but if there was anything special it would be necessary.
4878. What quantity of air circulated in the Hill End district before the strike? About 4,000 cubic feet per minute.
4879. When were you last in the mine before the explosion? On the 15th or 16th of March last; on one of those days, I do not know exactly which, I was in the Hill End district.
4880. Since the explosion when were you in the mine? On Saturday last.
4881. What part of the mine? Through the return from the furnace to the western.
4882. Is that the part of the mine alluded to in your evidence at the inquest, where Mr. White was trying to get somebody to shout to him when the explosion happened? Yes, it was in that return.
4883. You have completed that road now? Yes; we got through on Saturday, and I believe White was through earlier.
4884. You are quite confident that you have examined the old workings, and that there could not have been any accumulation of gas there? Not the slightest.

Mr. A. Ross. 16 May, 1887.

4885. Did you enter the first or second bords? No.
4886. Is the first bord in No. 1 heading stowed up? No.
4887. It was because of the increased quantity of air given out by the new furnace that you discontinued the use of safety-lamps in the bords? Yes, and the absence of gas as well.
4888. You never found gas in them since the strike? No.
4889. In reference to these doors, do you think if the west end door was left open that it would make much difference in the air? Not a great deal; it might make a little difference.
4890. Were trappers kept by all these doors? Yes.
4891. How many doors are there in the Hill End district? There are three doors in the Hill End district.
4892. Is it a fact that in the old country in the most fiery mines the ventilation is intersected to a great extent by doors kept by trappers? Yes, by single or double doors as the case might be.
4893. You expected that single doors would be a sufficient protection? Yes.
4894. Did Millwood ever report to you that one of these doors had been propped open? It was reported that one had been propped open, but I never got to the foundation of it.
4895. Did you hear of it before the explosion? No.
4896. The fact of no gas being found in the face of the bords and some of the headings when the ventilation had been suspended, the natural inference is that even if the doors had been left open for half an hour, much gas could not accumulate? I do not think it could.
4897. After 48 hours with very little ventilation there was only a little gas found? Yes.
4898. You distinctly stated that you never received a report from anyone concerning the existence of gas? Only once since the strike, and that was a small quantity in Hope's heading No. 1.
4899. Who reported it? White.
4900. What time? On the Friday previous to the explosion; it was a very insignificant quantity as he told me that it just touched the lamp in the cut.
4901. You say that in your opinion the explosion took place in No. 2 heading? Yes.
4902. It then went to the wall side, to the stopping in front of No. 2? Yes; blowing away the door and the stopping behind it.
4903. The explosion taking place in the face of No. 2, what space had it to expand when it reached that point? Only about 12 or 14 feet each way.
4904. It had then no wide space to get down to the right or to the left? No.
4905. Does that account for the confined state of the explosion? Yes.
4906. Being confined to this narrow space? Yes.
4907. If these places had been old, and had it not been for the dyke, it would have extended itself? Yes.
4908. *Mr. Hilton.*] You stated to Mr. Neilson that you were in the mine on the 15th or 16th of March last? Yes.
4909. Have you made it a special point of duty to travel the air-ways, to see that they were in proper order? Some of them, but not all of them.
4910. Did you not think it was a portion of your duty to make yourself acquainted occasionally with the whole of the air-ways, to see that they were in proper order? The wasteman has charge of the air-ways.
4911. Had you wastemen? Yes.
4912. Who were they? Millwood, and he had a mate with him, who travelled with him through the air-ways and kept them in repair.
4913. Millwood was wasteman and deputy? Not at this time—I was speaking before the strike.
4914. Was the system of ventilation the best you could have adopted? Yes, under the circumstances.
4915. Did Mr. White ever report to you the circumstance that two men, Woods and Wells, had been sent out of the mine for having their lamps unscrewed? Yes, I think he did so some days afterwards.
4916. In view of these persons having their lamps unscrewed, and being sent out of the mine for it, do you think it was prudent to allow them to work on the night-shift without someone in charge of them? It would be better, probably, if there had been someone in charge of them; but there were practical miners working on the night-shift.
4917. Did Mr. Nicholson ever state to you that No. 6 of these rules, which has reference to interference by employees, was regarded by the miners as a rule that would prevent them from making any remarks with reference to the condition of the mine, and that if they did so, some disability would be attached to them for so doing, under this rule? I don't remember that he did.
4918. *Mr. Owens.*] You say that the night-shift men were supposed to have their lamps locked, and that in the event of their losing their lights, they would have to come outside? Yes, they would have to go somewhere for a light. If their lamps went out they would be very awkwardly situated.
4919. Do you think that they could come out all that distance in the dark? No, but there were naked lights used outside the headings.
4920. *President.*] In the air-ways? Yes; the drivers use naked lights in the headings outside the danger-board.
4921. *Mr. Owens.*] Did ever anyone inform you that it was not safe for the wheeler to bring his naked lamp up to the danger-board in the heading? No.
4922. Don't you recollect anything of the kind, and did you tell the man to mind his own business? Never. Mr. Nicholson never spoke to me about it, or anybody else.
4923. Did the miners appoint check-inspectors at Bulli? No.
4924. Would you allow that to be done? Yes, certainly.
4925. Do you consider Mr. White a competent overman? Yes.
4926. Is he a careful and efficient overman? I considered him a careful and efficient overman.
4927. *Mr. Jones.*] I understood you to have said that you considered the Bulli mine more dusty than any you have seen? Yes.
4928. Did you, before this disaster, know that dust played an important factor in a gas explosion? Well, I have seen it referred to, and have read about it; but I have only learnt about it not long ago. It is a new theory to me.
4929. Then the watering of the horse roads was not done in view of danger? No.
4930. If you had believed or known that dust does play an important part in explosions, would you not have thought it necessary to have watered the main roads where the trains travelled at a high speed in a strong ventilating current? Yes, it would have been more necessary.

Mr. A. Ross. 16 May, 1887.

4931. You say that your instructions were that all safety-lamps used in the mine were to be locked? Yes.
4932. Did you ever make any inquiry, to satisfy yourself that they were locked? I inquired of Crawford if they locked them, and he said, "Yes."
4933. Did you ever inquire of Millwood? No.
4934. Did it come to your knowledge that they were unlocked? No. In fact I was fully persuaded that they were locked.
4935. You gave instructions that no shots were to be fired in the presence of gas? Yes.
4936. Were you aware that shots were being fired in Nos. 1 and 2 headings? Not in the presence of gas.
4937. You knew there was gas there? I knew the coal gave off a little gas in the heading.
4938. Did you know that there was gas in Nos. 1 and 2 headings, when shots were being fired?
Witness: When?
Mr. Jones: At the time they were being worked after the strike? I was not aware of that.
4939. Why, then, did you instruct them to use safety-lamps? As a precaution, for fear gas might come off.
4940. Did White ever inform you that gas was coming off? Yes, once only after the strike.
4941. When was that? The Friday before the explosion, and that was in No. 1 heading, which I have referred to.
4942. You say you cannot believe that sufficient gas could accumulate to cause the disaster and the wreckage which has taken place in the mine? I did not say that exactly. I say that I don't believe that the amount of gas which accumulated there caused the destruction.
4943. Would it have required a very large amount of gas to cause the destruction, considering the limited area of the workings? It would have a larger effect coming through narrow headings than if there had been an expansive space for it.
4944. You have already stated that White reported to you that some men had been sent out for working with unlocked lamps? Yes; they had taken the top of their lamps off.
4945. Did you report that matter to the inspector? No.
4946. Did you not think it of sufficient importance? No.
4947. Did you consider it a breach of the Coal-fields Regulation Act?
Witness: What part of the Act?
Mr. Jones: That regarding the locking of lamps? Yes; working with an unscrewed lamp was a breach.
4948. Do you consider it a prudent measure to allow bords working with naked lights to be commenced in close proximity to new workings. That is, the exploring headings Nos. 1 and 2, under the circumstances, and the circumstances are these, that gas was known to exist in these headings? The presence of gas was not known when the naked lights were ordered to be used there; but safety-lamps were used in the headings, as there might be a probability of gas coming off.
4949. Were any safety-lamps used in the bords off No. 1? No.
4950. They were used in the heading on account of the presence of gas, we have been told? They were used on account of the probability that we might come across some gas.
4951. Is it not held by mining authorities that exploring headings giving off gas should be a reasonable distance from bords worked with naked lights? A reasonable distance, no doubt.
4952. Don't you think that a wider margin of safety would have been better? I thought that the margin was sufficient, from the former experience we had.
5953. Is it not a very narrow margin, considering that safety-lamps were used on one side of the prop of the danger-board and a naked light on the other? It depends upon the quantity of the air passing at the prop.
5954. We are told that the air was considerable; but in spite of that, an explosion has occurred which proves that there was not sufficient to prevent an explosion. Would it not, then, have been better for these headings to be further in advance of the naked lights? Perhaps it would have been better.
4955. Did you ever inquire from the deputy as to the mode of firing shots? No.
4956. You gave instructions that shots were not to be fired in the presence of gas. Would you be surprised to hear that your overman had appointed someone to fire shots in the bords off Nos. 1 and 2 headings?
Witness: In the presence of gas?
Mr. Jones: There was no gas at all.
Witness: I am aware that shots were fired in the bords and headings, but my instructions were that they were to fire no shots in any place in the presence of gas.
4957. You knew that shot-firing was carried on? Yes.
4958. Don't you think that some qualified person should be appointed to fire shots? There was a man to see that the places were clear before shots were fired.
4959. Did he do so? I have reason to believe so; of course I was not there.
4960. Do you believe that Crawford did so? Yes, I believe he did.
4961. We have it on oath that Millwood did not? I believe so.
4962. Did I understand you to say that the displacement of rock could have brought about the wreckage at the big fall? It could not displace the timbers, and put them in their present positions.
4963. But the haulage ropes pass at the back of some of these timbers? Yes.
4964. Would that not have a tendency to draw them out? Yes, if that rope was drawn down against them.
4965. Did Mr. White ever report to you that the men were working with unlocked safety-lamps? No.
4966. Ought he to have done so? Yes, if he knew it.
4967. Did you see the horse that was said to have been burnt at the mouth of the tunnel? Yes.
4968. Was it burnt? The hair seemed to be singed.
4969. How do you account for that? I cannot account for it.
4970. Can you offer any suggestion with regard to it? Probably it might have been caused byheated air.
4971. *Mr. Croudace.*] Are you solely responsible for the laying out of these workings in the Hill End district? Yes.
4972. You laid out a plan or sketch? Yes.
4972½. Did you consult the overman? Sometimes I did.

4973.

Mr. A. Ross. 16 May, 1887.

4973. In opening out this Hill End district, that is, in going through the dyke, did you meet with gas there in the first instance? Yes.
4974. And have you had gas in the Hill End district since that time? Yes, off and on, but not at all times.
4975. Was there any time when all portions of the mine were without gas? Yes, at times.
4976. The whole of it? Yes, the whole of it.
4977. Did you use safety-lamps before the strike, and from the time of first opening out the district? Yes.
4978. And ever since? Yes.
4979. In some instances they were used more as a matter of precaution? Yes, in the headings.
4980. In laying No. 1 heading out, you opened it quite close to the dyke; within some 20 yards? Yes.
4981. As a matter of economy, was that a prudent thing to do, knowing that your bords would only go 20 or 30 yards? Well, we could not study economy, as we had not sufficient places, and another reason was that I expected the dyke to run away back, as we got it on the other side of the workings, and I expected it to fall back the same way again.
4982. In opening up Nos. 1 and 2 headings, you took the fresh air from No. 1 to No. 2; and you stated that you believed the explosion occurred in No. 2 heading? Yes.
4983. Now, if there had been many bords broken away from No. 2 heading, do you think there would have been the amount of death? There would have been more if there had been men working in them; but the explosion would not have been so confined. Of course, if there had been no bords there, there would have been no men, except those in the headings.
4984. Under these circumstances, don't you think it would have been better not to have had bords in the return of the gassy section? I did not think there was sufficient gas to lead me to believe that.
4985. You say you had reported to you the presence of gas in Nos. 1, 2, 3, 4, and other headings? Yes, a little gas occasionally.
4986. But never reported since the strike? No, not in No. 2 heading or any other place, with the exception of a little in No. 1 heading.
4987. How then do you come to the conclusion that the explosion took place in No. 2? By the appearance of the heading, the charring of the props, and the destruction about there.
4988. Does that convince you that there was gas in No. 2? Yes.
4989. If White, Crawford, and other witnesses have sworn that gas has been there all along, how do you account for not knowing it since the strike? Well, I did not know of it, because it was never reported to me, and I had never seen it myself.
4990. Your system of reporting was simply verbal? Yes.
4991. As you saw the overman you got reports from him, and if you did not see him of course you did not get them? I always expected reports from him if there was anything important for him to report.
4992. As a matter of fact did you get reports daily? Yes, I saw the overman daily, and I visited the mine daily.
4993. And he never reported to you the existence of gas in No. 2 heading? No.
4994. Are you sure you saw him every day? Every day excepting Monday or Tuesday before the explosion.
4995. Would it not be better if you had written reports daily whether there was danger or no danger, gas or no gas, and that these reports came direct to you? Probably it would be.
4996. To me it is most unaccountable that gas existed, and yet you did not know it? The first time I heard of it was Monday or Tuesday before the explosion, and that it was very little.
4997. So it was practically the necessity of having coal that led you to start the heading near the dyke, and to break away the bords on each side? That was the principal reason, and I have already stated that I expected that the dyke would lay away from these headings, and I put these headings on on that account.
4998. Suppose there had been no pressure, would you have laid out these headings further away from each other? I think I would, but from former experience I did not expect a large coal-field there.
4999. Knowing that there was gas in No. 2 heading, do you not think it would have been better to have had bratticing running into it, and do you not think it best to run bratticing wherever gas exists? Probably it is if the gas is continuous.
5000. Coming to the doors, you say you did not think, on account of the nearness, that two doors would be better than one. As a matter of fact, if they were only 50 feet apart would it not be better to have only one door open at one time? Yes.
5001. Well, would not that be a better system? Of course two doors are always better than one in a main air-course where there is a pressure on.
5002. Have you seen the ordinary miner's lamp said to have been found in the face of No. 2 heading? Yes, one of that description. [*Lamp produced.*]
5003. Knowing that, and believing that the accident occured in No. 2 heading, do you think that the explosion was owing to that lamp having been used by some one? I cannot say; I am not sure.
5004. Would it be possible for a man to be using that lamp in the heading when the explosion occurred without being blown away, and the lamp as well? Quite possible.
5005. Do you not think that the body of the man using the lamp would have been found in the heading? I should fancy he would.
5006. Do you attach any weight to the finding of that lamp as being the cause of the explosion? I hardly think so; of course I could not form any decided opinion.
5007. Have you ever had reported to you any accumulation of gas in any part of the mine, either in the old workings or in the bords in Nos. 1 or 2 headings, or in the return air-ways, or seen near the furnace, or in the western district, at any time previous to the strike? Oh, yes, gas was reported in the headings occasionally.
5008. Accumulated gas? Yes, in places which were stopped until the stentons were put through.
5009. Where? I think in No. 4 heading, but I am not certain.
5010. A long time ago? Yes, a long time before the strike.
5011. Between the commencement, after the strike, and the explosion, did you know of any accumulation? I had no idea of any accumulation that could take place since the new furnace was lit, and I never had it reported to me.

5012.

Mr. A Ross. 16 May, 1887.

5012. *Mr. Neilson.*] In the event of there being a considerable quantity of gas which kept a safety-lamp full of fire, would you allow the miners to work in that? Certainly not. I would not allow a miner to work where gas would fire in the lamp at all.
5013. With 12,000 cubic feet of air per minute did you think that quantity was sufficient to render any gas that might come off from these headings harmless? Yes, for it would take 1,000 feet of gas per minute to render that air explosive.
5014. Then 12,000 cubic feet of air per minute would render a large quantity of gas harmless? Yes.
5015. *Mr. Hilton.*] I understood you to say that you had never seen gas in the mine since the strike? No, I have not.
5016. And never reported to you? Not with the exception of that reported on Friday in No. 1 heading, and that was a very small quantity, which was just rising out of a small fissure.
5017. What day did the mine resume work when the strike terminated? The contracts for the headings were taken on the 7th March, but previous to that there had been four men in these headings, Nos. 1 and 2, for three weeks, and no gas was reported.
5018. According to your statement the strike was virtually over on the 7th or 8th of March? Yes.
5019. And the disaster occurred on the 23rd? Yes.
5020. That is fifteen or sixteen days? Yes.
5021. During this time were you in the gassy section? Yes.
5022. You never saw any gas? Never.
5023. Not in No. 1? No; but it was reported to me; I never saw any myself.
5024. How often were you in the mine since the termination of the strike and up to the day of the explosion? I do not know. I recollect being in on the 21st of February, on the 26th of February, and on the 15th or 16th of March.
5025. *Mr. Croudace.*] Your overman was in daily? Yes, daily.
5026. *Mr. Jones.*] Are you aware that it has been reported to the Commission that some bords are as high as 41 and 42 yards in advance of the air? Yes. It has been an oversight on the part of the overman.
5027. You admit that it is a violation of the Act? Yes, certainly.
5028. Had you trappers employed at all times up to the time of the strike? Yes.
5029. Are you sure that you are not making a mistake? I do not think so. If there were not trappers there were some other persons appointed to look after the doors.
5030. We have it that such was not the case? If there were not boys there was somebody else appointed to look after them.
5031. *Mr. Clarke.*] Would the overman have authority to put in bratticing or order it to be done, or would he consult you? He would probably have consulted me first.
5032. *Mr. Croudace.*] Have you been restricted in any way by any false idea of economy in the use of material for bratticing or doors? No, never.
5033. The Company are liberal enough in that way? Yes; I was never restricted by them.
5034. *Mr. Owens.*] Was the powder magazine in the mine? No, it was down near the jetty.
5035. Was no powder kept in the mine? Yes, some was kept there for supplying the men.
5036. How much? Sometimes 20 lb. or so.
5037. *President.*] Only a small quantity? Yes; the powder magazine, where the bulk of the powder is kept is down near the jetty, and it was brought up in small quantities, in bottles as we wanted it. [*The witness withdrew.*]

James Rowan sworn and examined:—

Mr J. Rowan. 16 May, 1887.

5038. *President.*] You are the Government Inspector of Coal-mines for the Southern and Western Districts? Yes.
5039. You hold a certificate of competency under the Coal-mines Regulation Act of 1872? Yes. I passed a Government examination and received a certificate of competency.
5040. What experience have you had in mining—How long have you been engaged in coal-mining? Since I was a boy 9 years of age.
5041. How many years? I am now 45; during that time I was ten years a colliery manager in two collieries in Scotland.
5042. Did these mines produce fire-damp? Yes, both gave off fire-damp more or less; and I may state that I, on one occasion, had charge of the safety-lamps in connection with an examiner of mines, when taking the ventilation of other collieries.
5043. In your present official capacity did you make periodical inspections in accordance with the terms of the Act in this colliery? Yes, every eight weeks, more or less.
5044. Were these examinations of a thorough character? I consider that they were careful examinations.
5045. Did your inspections include the examination of the return air-ways? They included the intakes, the returns, the main-ways, the bords, and the headings.
5046. Generally speaking, were you satisfied with the result of these inspections? As a rule I was; but I had occasion to complain to Mr. Ross on account of the condition of the return air-way from the western down to the grip. That is where the new furnace is.
5047. When was that? Previous to the strike I complained about it. After the strike of course the road was in a worse state owing to the heavy falls which had taken place during the time that operations were suspended, but before that it required a little repair.
5048. Have you ever had any complaint made to you regarding the condition of the workings of the Bulli Colliery? I never had a complaint good, bad, or indifferent.
5049. No complaint of the unsafe state of the roads? I never had a complaint of any kind whatever from the Bulli miners.
5050. Do you know Mr. Nicholson, miner at Bulli, and secretary of the Miners' Union? Since the strike he has been pointed out to me; I did not know him before that.
5051. Do you know whether he ever made a complaint to you of the unsafe state of the roads in this colliery? Never, to my positive knowledge.

5052.

Mr. J. Rowan. 16 May, 1887.

5052. Are you quite certain? Yes; but if he did it has clearly gone away from my mind, for I have not the slightest recollection of anything of the kind.
5053. Were the management of this colliery always ready to comply with any request you made for the better condition of the mine? I never had reason to complain except the instance I have referred to.
5054. Were they disposed to meet you in order to better the condition of the colliery? Yes.
5055. Have you had occasion to doubt the competency of the manager at Bulli? I always looked upon him as a competent, careful, and anxious man.
5056. You think him a competent man? I considered him so.
5057. Were you satisfied with the qualifications of White, the overman? Well, he was somewhat peculiar in his habits.
5058. His habits or manner? Well, I should say that his manner was peculiar. I have had to enforce him to be careful, and he would generally want to know what was wrong now.
5059. Do you consider him a careful man? As far as I saw he appeared to be.
5060. Was he anxious? Yes, anxious.
5061. Did you consider him competent? I used to question him very often, and from the answers he gave I would consider he was qualified.
5062. Do you know Crawford, the former deputy? Yes.
5063. Did you consider him a careful and competent deputy? I have found nothing important against him except some little things. One day Mr. White had a dispute with him when he charged him with wilfully leaving a door open which considerably reduced the ventilation; that is the only thing I can remember.
5064. Did White impute that the door had been opened by Crawford purposely to reduce the ventilation? Yes; I was taking the register of No. 1 heading, and I found it was down below the requirements of the Act. I told White that it was so, and that I would have to serve the Company with notice. He seemed astonished, and I said I would go around the workings into the furnace, and would then take another register to see if there was any difference. After we had gone around a certain portion of the workings we came to the door that was open. Crawford was near it, and White charged him in high words with wilfully leaving the door open.
5065. You have no knowledge whether he was guilty or not? No.
5066. You knew Millwood, the last deputy? Yes, I have spoken to him.
5067. Were you satisfied of his qualifications? I had no personal knowledge of him. My only knowledge of him was from statements he made to me. He told me that he was thoroughly acquainted with the mine, and he examined it every morning with a safety-lamp; he also said that he had knowledge of fiery mines. I asked him if he had ever seen fire-damp in the mine. He said not very often; but he might at times see very little in some of the headings, but it was very slight.
5068. Did he not accompany you while you were last inspecting the mine? No; White was with me.
5069. When was your last inspection? My last official inspection was on the 15th February of this year.
5070. Did you carefully examine the bords for gas? I examined every bord in the Hill End district.
5071. Did you find any gas? I never found the slightest trace in any of the bords.
5072. Did you find any in the headings? I found a slight trace in one of the headings; a cut had been put in about 3 feet, and putting the safety-lamp right in the cut I saw a slight cap upon the lamp.
5073. Was the statement made by Millwood that he had seen very slight traces of gas confirmed by your own inspection? Yes.
5074. We are informed that the bords off Nos. 1 and 2 headings gave off gas before the strike? I never found the slightest trace of gas in any of the bords, and only on rare occasions in any of the narrow headings.
5075. Such a sweeping assertion as I have narrated is not in accordance with your examination? Not with the examinations I have made.
5076. We are also informed that no gas was given off in these bords since the strike. Is that in accordance with your examinations? Yes.
5077. Are you aware what would account for this circumstance, presuming that the bords gave off gas up to the time of the strike. Is the condition of the bords different now to what it was previous to the strike? I believe they are just the same.
5078. Then you would expect these bords to be giving off gas at present if they did so before the strike? Yes.
5079. Did anything occur during the strike that would cause gas to be given off in these bords? No; I examined the mine during the strike, and found no gas in the bords.
5080. So the strike would in no way account for it? No.
5081. Would the improved ventilation cause it? No, I should think not.
5082. You made particular examinations of all parts of the mine? Yes.
5083. You knew that the Hill End district gave off gas to some extent? Yes, a slight percentage of gas.
5084. Have you observed gas in any other district of the mine? Never.
5085. Did the knowledge of gas being given off in one district make you more careful in your inspections? I was always very careful in my examination of the Hill End district, and I made it a point to question and inquire of the miners in these places. I would say words to this effect: "Men, are you satisfied that this district is carefully examined before you come into your work." They would reply, "Yes." Then places were examined. I would also ask if the deputy ever came in during the day, and they would tell me that he came in several times. Before I left I would sometimes say, "Now is there anything that I have overlooked, and, if so, will you let me know what it is?" On many occasions I have said words like these to the men.
5086. You have not received any complaints from the miners as to the amount of gas, or any other dangerous condition of the mine? I never received a complaint before the explosion. I have heard a great deal since, but never before the explosion.
5087. You gave the miners every opportunity to complain if they wished to do so? Yes; I have often sat down with the miners, and was always friendly with them, and they with me.
5088. Gas was never found by you in dangerous quantities? Never in dangerous quantities.
5089. Was the quantity sufficient to render the use of safety-lamps expedient? Yes; because there was a limited amount of ventilation at that time. The average varied from 3,000 to 3,500 and 3,600 cubic feet

feet per minute, and that intake being rather low I approved of the precaution of working the narrow headings. and the bords about them with safety-lamps.
5090. Your examination included the return airways. Were they sufficient? Yes; in one way I was satisfied, but not in another. There was a large enough area in the return airways to take 100,000 cubic feet per minute, but I wanted a travelling road through it, and I urged the manager to have a recognised travelling way.
5091. These airways did not impede the air? No; they are taking now 60,000 cubic feet of air per minute through the returns.
5092. You wanted a thorough travelling road and what was the result? The manager promised to comply with my request and said it would have been done earlier, but at the commencement of the strike, all the deputies left with the miners, and he could not get men, but stated that he would make it his first business after the strike to have the road completed.
5093. Do you know whether he complied with his promise? Yes; he had two shifts of men on the work.
5094. Could you have expected more? No; although I made myself disagreeable to him by urging him on, and he told me that he was doing all that he could. I considered it necessary to press the matter as I wanted a proper travelling way down to the furnace.
5095. Did you satisfy yourself of the amount of the ventilating currents? Yes.
5096. Could you give us the amount of these currents before the strike? The average amount of ventilation going in the main tunnel was 15,000 cubic feet per minute.
5097. Of which the Hill End section would get how much? From 3,000 to 4,000 cubic feet, and the balance would go to the western and grip districts—which were about equally balanced by the regulating door having from 5,000 to 6,000 cubic feet per minute each.
5098. Since the new furnace was put into operation what has been the difference in the ventilating current? We have got as high as 64,000 cubic feet per minute, of which amount 12,000 cubic feet was brought up to the Hill End district.
5099. And this large ventilation was due to the new furnace? Yes; it is in 43 chains from the entrance of the tunnel; and the air shaft is 320 feet deep.
5100. Were you satisfied with these results? Yes; I was satisfied so far as the ventilation was concerned, and I said to White "You are now in a position to send 20,000 cubic feet per minute into the Hill End district, and I hope next time to take a register of 20,000 cubic feet instead of 12,000."
5101. Knowing the quantity of air circulating in the Hill End district, was that sufficient to dilute and render harmless any quantity of gas which you supposed could have been given off in Nos. 1 and 2 headings? Oh, yes.
5102. In the course of your inspections of this gas, did it strike you that it was peculiarly quick? Yes; it seemed to come very quick upon the lamp. It acted very sharp upon the light.
5103. Had you ever to complain at the distance of the cut-throughs from one another? I never had any complaint; but of course in going round the mine to make an official examination, you have not time to measure everything.
5104. Does the Bulli Colliery contain many rolls? Yes; numbers of rolls.
5105. Do these offer any impediment to the cut-throughs? Yes; I have seen places where they had to drive 20 yards through stone, but in the bords they are inclined to work down and then back upon them.
5106. In view of these rules would you be disposed to extend any latitude to the manager in particular instances with respect to the distance which separated the cut-throughs? I have no power to do so by the Act.
5107. We are informed that safety-lamps were alone used prior to the strike in the Hill End district? Yes.
5108. And that open lights have been used in the bords of this district since the strike? Yes.
5109. Can you give any reason for this change? Owing to the increased ventilation and the new furnace having power to again increase it by another half and no fire-damp having been seen in any dangerous quantities in the Hill End district, I did not see that I could enforce the management to continue working with safety-lamps.
5110. Did you examine the condition of these lamps? I made no careful examination of them. I have gone into the bords and asked for a lamp from the miner to examine the condition of the working place, but not exactly to examine the condition of the lamp itself.
5111. You never said whether they were locked or unlocked? I never tried to twist them to see if they were locked. Of course I understood that the rule for locking these lamps was obeyed, and it was the province of the deputy overman and manager to see that it was carried out. The same rule applies to matches and pipes, and surely I cannot be called upon to search the men to find out if that rule is broken.
5112. It was beyond your power? Yes.
5113. Did any of the miners complain to you of the circumstance that the lamps were not locked? I never received any complaint at all about it.
5114. Was the change from safety-lamps to naked lights made with your approval? No.
5115. Were you consulted? I was not.
5116. Is your approval or consent required under the Act? No, not directly; but it would have been prudent for the management to have done so.
5117. Were you satisfied with the change that was made in the bords? I looked upon the change as safe, seeing that they were free from gas when the ventilation amounted to 3,000 cubic feet per minute, and when they received the ventilating current of 12,000 cubic feet per minute with power in the new furnace to increase that amount, I did not see how I could object to the management working with naked lights at a respectable distance from the headings.
5118. More or less gas always came off in these headings? Yes; I believe a small quantity of gas always came off in the narrow headings.
5119. In your opinion did not this require some special provision to sweep it out from these headings? No; with the quantity I have seen in any heading I did not think there was anything urgently necessary; I thought cut-throughs placed at the proper distance would meet the case.
5120. Have you seen any bratticing used in the Bulli Colliery? No; although had I been manager of the colliery I should have dealt with the ventilation in a somewhat different way.
5121. Did the use of bratticing in these headings ever suggest itself to you? Not particularly, because

Mr. J. Rowan. 16 May, 1887.

I did not see anything dangerous in the quantity of gas coming off, and even now with the crippled condition of the ventilation there is not a bord or heading in the Hill End district where the slightest trace of fire-damp can be found with the exception of Nos. 1 and 2 headings.
5122. We have evidence all round of a quantity of gas coming off in these headings. Did the men ever complain to you of it as dangerous? I never had a solitary indication of any amount or accumulation of gas from any man.
5123. No complaint? No complaint whatever.
5124. Was any complaint made to you as to the state of the lamps? No complaint at all.
5125. Do you find the men generally backward in making complaints of these things? No; the men I find generally talk pretty freely.
5126. Are you perfectly positive that you never did receive a complaint as to the amount of gas in the mine or state of the lamps? I never received the slightest intimation concerning one or the other.
5127. Do you know the miner Hobbs? Since this inquiry commenced I have heard about him, but I never knew him before personally.
5128. Did he call your attention to the state of the lamps and gas? Never; my attention was never called to one or the other by Hobbs or any other man in the Bulli Colliery.
5129. Are you positive? I am as certain of it as death, sir.
5130. Were you in a general way satisfied that the colliery was carefully conducted? I had no complaint to make of it except what I have referred to in connection with the returns.
5131. Did you observe how shots were fired in this colliery? On my last inspection in February Mr. White told me that he had tried to insist upon doing away with shot-firing, but that the men said they could not make wages without it. He also said that since the new hands came in no shots were fired in the Hill End district, and that he intended to fire no shots in the district in future. That was his statement to me.
5132. Did you know whether shots were fired in the headings by the men working there on the day of your inspection? No shots were fired while I made my inspection in February.
5133. Did you ever enquire as to whether explosives had been used? White told me that all shots were done away with in the Hill End district.
5134. Would you be surprised to learn that inside the gas in No. 2 heading with the danger-board fixed at the end of the stenton, men have acknowledged here having lit shots in the face of that heading by striking a match? I have been awfully surprised to hear it.
5135. You were not aware that shots were fired at all? Not since the strike. I was informed that previous to that the deputy, Crawford, fired the shots in this district.
5136. These headings intersected numerous rolls? Yes.
5137. Is gas given off in greater abundance near these rolls? Yes; there is a likelihood of its being found in larger quantities in proximity to rolls and when fissures are cut. It is likely to come off in the shape of blowers, although I have seen rolls in other districts where there was no gas and have never heard of any blowers in connection with them.
5138. Was a blower never reported to you? Never; a blower, fissure, or any additional quantity of gas of any description.
5139. Is it customary for a tongue of flame to be projected some distance by a blown-out shot? Yes.
5140. If the shot is tamped with dry dust, would this flame be increased? Yes; greatly.
5141. If in addition to that the atmosphere is laden with fine dust, would that intensify an explosion? Yes; the proportion of 16 oz. of this coal-dust to 160 cubic feet of air is sufficient to cause an explosion?
5142. *Mr. Croudace.*] Do you know that of your own knowledge? No; not from my own knowledge, but from experiments made by others.
5143. *President.*] Would this flame be intensified if, in addition to dust, there was a small percentage of marsh-gas present? Yes; it would increase it greatly.
5144. Have you examined the face of heading No. 2 since the accident? Yes.
5145. Do you think a shot had been fired before the explosion? It had all the appearance of a shot having been fired. The coal lying down in the face of the heading indicated that.
5146. Do you think that that shot was fired under the conditions I have narrated—a small quantity of marsh-gas, a dusty atmosphere, the probability of the shot being tamped with small coal, and of its being a blown-out or overcharged shot? I am of opinion that there has been a quantity of gas about the face of No. 2 heading, and that has been ignited by the shot, and that in the act of firing gas, or rather immediately after the explosion, it increased its force eight times, and came out of the heading in the shape of flame, which would instantly raise the coal-dust right throughout the Hill End district.
5147. So you believe that the explosion was due to the explosion of light carburetted hydrogen gas? Yes; I cannot define the quantity, but I believe there has been a mixture of coal-dust with it. I have been six or seven times in the mine since the accident, and from the indications of charred props, and indications where the force passed, I am positive in my own mind that it came from No. 2 heading, and that it was largely assisted by coal-dust.
5148. Can you give us the cause of the explosion as far as you could judge? It commenced in No. 2 heading and came straight out, separating itself in two parts at the stenton dividing the two headings. One portion went out of No. 1 heading, and the heavier body went straight out of No. 2 heading to the last bord of the main heading. It passed down then through the stenton, where we found the props literally charred, and in some places coke about 2 inches deep, where she has apparently lingered as she went down. Then I believe that the two divisions met in the main heading, and afterwards one division went down the main tunnel, and the other went into the western district. The latter part, in going down, then broke through the air-crossing, and again split itself into two. Subsequently, it went again into the main tunnel; but I believe a few seconds would elapse between these two currents reaching the tunnel-mouth. The other force went down to the western and exhausted itself, and that owing to the furnace it could only do a little damage.
5149. Then the combined force partly dissipated itself by blowing down the stopping at the foot of No. 2 heading? Yes.
5150. Do you believe that flame can be transmitted by means of fine dust to a distant locality and explode a magazine of gas in that locality, no gas intervening? I should think it would be hard to reconcile.

5151.

5151. You say that a dust-laden atmosphere will produce an explosion. Could a flame be carried by dust? Yes; if the dust is in a fused state.
5152. If an explosion takes place in one spot, and there is a dust-laden atmosphere, could the flame be transmitted to a distant locality by means of the coal-dust? Yes; I believe it could.
5153. You have inspected this mine repeatedly since the accident? Yes.
5154. Do you believe that there were any separate reservoirs of gas ignited by the flame projected from the explosion at No. 2 heading? No; I do not think so.
5155. Do you believe that gas had accumulated in some of the abandoned bords off No. 1, I mean the first two bords that were driven off that heading? No; I do not think that any existed there, because I inspected all that locality, and I never found any gas in there.
5156. Are you of opinion that no gas existed in the abandoned bords off the return before the accident? I have travelled that way, and I never found any fire-damp, and I cannot see where it could exist there with 12,000 cubic feet of air per minute passing.
5157. If a reservoir of gas exploded here would these old bords have presented evidences of a separate explosion? Decidedly.
5158. Are there any indications shown on the stoppings? No; not in the stoppings. If gas had exploded in them, the stoppings would have been blown outwards.
5159. Then you don't hold to that opinion that gas existed in the bords in the locality that I have indicated? No.
5160. Is the damage in the mine very great? Not very great; there are two extensive falls, but these could have been done by a set breaking away at the top of the incline. The damage is not so great as one would expect after an explosion in which so many lives were lost.
5161. Considering the comparatively small area of workings, the destruction of life is unusually great? Yes; it is.
5162. Would the limited area of the workings account for the total annihilation of life? Yes; as the explosion was concentrated to this small area.
5163. If the force of the explosion had been dissipated in the old workings, do you think the same destruction of life would have occurred? No; because it was confined to certain limits in which all the men were working. It had a straight road to go out of the Hill End district, and a clear way down to the western. It had two tunnels to pass through; but if there had been a larger area that force would have been distributed, instead of which it was confined like the barrel of a gun.
5164. You made an examination of the condition of the bodies? Not the first day, as I was away at Mittagong, and it was some twenty hours after the accident when I got down.
5165. Have you formed any opinion as to the cause of the majority of deaths? I believe the majority died of suffocation from after-damp.
5166. What does after-damp consist of? In it there are seventy-one parts of free nitrogen, nineteen parts of steam, and nine of carbon; that is, the moment after explosion. Of course after a little while it undergoes some change, as soon as the steam is condensed.
5167. Free nitrogen is destructive to human life? Yes; there is no oxygen to carry on existence.
5168. Do you know of the destructive nature of carbonic oxide? Yes; 1 per cent. is fatal to animal life; but a light will burn in some cases in connection with it.
5169. How do you expect carbonic acid after an explosion? It is generated by imperfect combustion.
5170. Will the firing of fine dust account for its presence? Oh, yes.
5171. Composed as it is of nitrogen, it would be quite sufficient to destroy life? Quite sufficient.
5172. Are you satisfied with the system of ventilation by means of doors practised here? If I had been the colliery manager I would have tried to do away with the doors altogether in the mainways. Nevertheless, I have never found that the provisions of the Act require that.
5173. You are aware that many of the large collieries are ventilated by means of trap doors? Yes.
5174. Were these doors attended by trappers? Yes; placed there specially for the purpose.
5175. Would the opening of the door during the passage of trams through it be a source of danger in Nos. 1 and 2 headings? No, not for the passing of the sets; but if it had to be left open any length of time there would be a certain amount of risk in it, as the air would go another way.
5176. Would the door require to be open any considerable length of time during the passing of a set? No; I have been in the Hill End district when the traffic was going on for two hours, and I never saw any visible change in the ventilation by the traffic.
5177. It would only manifest itself if the door was allowed to remain long open? Yes.
5178. Do you approve of the position of the door fixed at the entrance of the western main road? Yes. It is what they term a regulating-door, allowing a certain portion of air to go one way, and another the other way. It had to be so regulated, because it would have taken the road into the furnace.
5179. Considering the circuitous routes which the air from the western district had to pass through, could not the regulator be placed on the return instead of where it is? Yes. I might be allowed to explain that this door on the western had a stationary man or boy specially to open or shut it. In the event of that door being open for any length of time it might seriously interfere with the ventilation, but no serious stoppage would ensue if only left open for a few moments, because the air would divide itself, and by its circuitous routes round the western and its straight way into the Hill End district, the straight route would get its proportion of the ventilating current.
5180. Do you consider that the opening of this door may have been the cause of this explosion? If the door was left open for any length of time, it would certainly deprive Nos. 1 and 2 headings of their proportion of air.
5181. Have you any reason to suppose it was left open in view of the fact of the attendant being found on the flat in the vicinity of the door? I could not say as to that; it is impossible to say.
5182. Do you consider that any interruption of the return airways from the Hill End district may have been the cause of the accident? No; because even now they are capable of discharging 100,000 cubic feet of air per minute.
5183. What quantity of air was passing through these returns on the day after the accident when you visited the colliery? There was a current of 30,000 cubic feet of air coming from the western, and 24,000 cubic feet coming from the Hill End district.
5184. Was that any evidence of any interruption in the returns? I should say not. I have tested them

Mr. J. Rowan. 16 May, 1887.

six or seven times since the accident, and I always got an average coming from the two returns of 60,000 cubic feet per minute.

5185. With gas issuing from Nos. 1 and 2 headings, would you consider it an evidence of mining erudition to work the bords off No. 2 heading, or in the return air with naked lights? As I have previously stated, I thought that with this increased ventilation, and no fire-damp having been seen in the bords when the ventilation was much lower, I could not reasonably object to the bords being worked with naked lights, when the ventilating current was 12,000 cubic feet per minute, and when there was power in the new furnace to increase that in the same district up to 20,000 cubic feet.

5186. They had ample means of rendering harmless all the gas that you had ever known in these headings? Before that quantity of air could have been brought up to an explosive point it would require 1,300 cubic feet of gas per minute to be mixed with it; and such an enormous quantity of gas would be quickly felt as you approached it. [*The witness then withdrew.*]

TUESDAY, 17 *MAY*, 1887.

Present:—

DR. ROBERTSON, PRESIDENT.

MR. O'MALLEY CLARKE,	MR. JONES,
MR. NEILSON,	MR. OWENS,
MR. CROUDACE,	MR. HILTON.

James Rowan—examination continued.

Mr. J. Rowan. 17 May, 1887.

5187. *Mr. Hilton.*] I notice, Mr. Rowan, that on the occasion of your last inspection of Bulli mine, previous to the explosion, you found 12,000 cubic feet of air passing into the workings? I may explain to the Commission that the inspection of the 17th March was not an official inspection, as it were. I was only down there with the Examiner of Coal Fields when he was taking the measure of the coal area for royalty. My last official inspection was on the 15th February.

5188. On that occasion you found 12,000 feet of air going into the Hill End district. Now, considering the present defective state of the ventilation, and the small amount of gas found in the headings, would you be disposed to believe that the ventilation must have become deranged immediately before the explosion (say) for three or four hours before? Well, as to that, I can only fall back upon the state of matters as I have found them, comparing the results of inspection previous to the explosion, with the examinations made since, when there was a very low percentage of air passing, and not a trace of fire-damp could be found, except in Nos. 1 and 2 headings.

5189. Well, Mr. Rowan, would you reasonably expect that the same amount of air that you found on your last inspection was passing through the workings on the day of the explosion? I cannot say what took place, as it was an ordinary day, and everything was going on in the ordinary routine.

5190. *Mr. Croudace.*] Is there any part of the system of ventilation that could become deranged? I do not think so.

5191. Supposing it did become deranged, where do you think such derangement would take place, so as to diminish the amount of ventilation going to the Hill End division? You are well aware that there is a door on the western, at the junction with the main tunnel? Yes.

5192. Supposing that door was knocked down? You might as well ask me if all the doors were knocked down.

5193. Well, Mr. Rowan, supposing this door on the western had been open three or four hours before the explosion, would it considerably diminish the amount of ventilation going to the Hill End district? Yes; it might diminish it to the extent of 2,000 or 3,000 cubic feet per minute.

5194. Supposing this door (at the western) were knocked down by the sets passing, you say that the ventilating air would divide itself into two currents; on which road do you think the greater volume of air would go—on the western or to the Hill End division? Well, I can scarcely say; it would depend greatly on the friction of the respective airways.

5195. Supposing these stoppings on the tunnel were in good order and a regulating door was placed in the western return, do you not think it would be a better system of ventilation than having this door on the western road? Yes; I believe it would; and if I were the colliery manager I might adopt it.

5196. *Mr. Neilson.*] Can you assign any cause for the large fall on the main tunnel, Mr. Rowan? The only explanation I can give of that is that the blast as it came down dislodged a number of props, and caused the roof to fall.

5197. Can you assign any cause for the bodies on the top of the incline being burnt? No.

5198. Was the timber all charred in that part? I carefully examined all round there, and I saw no effects of flame passing that way.

5199. In view of gas giving off in Nos. 1 and 2 headings, do you think it would be advisable to dispense with these two doors on the main road? Well, it could be done; but it never occurred to me, because the requirements of the Act were complied with, and that is all I had to see to. If I were a colliery manager, and had to concentrate my attention on one colliery, I would use methods both as to trimming and ventilation to suit my purposes.

5200. It has been suggested that the doors on the main roads might be abolished. Where would you place your regulating doors? Well there is a door on the main road [*pointing to the plan*] you could dispense with, and put an air-crossing at the foot of No. 2 on the main road, and enter it on the return, taking the split at No. 1 heading. You could deal with Nos. 3 and 4 in the same way.

5201. But the gas is given off from Nos. 1 and 2. Do you think it would be advisable to carry the air round past the two points where gas is, and pass these bords here [*consulting plan*]? All the gas I ever saw there, with the exception of Nos. 1 and 2, was practically harmless.

5202. Could these doors be dispensed with altogether? Yes. You are aware that it is one thing to inspect a mine and see that the requirements of an Act are complied with, and quite another thing to manage a mine.

5203. Quite so. Fifty managers may have fifty different ways of doing things? Yes.

5204. *Mr. Croudace.*] We wish to see if any improvements could be made on the present system here? Yes. I have said these doors could be dispensed with altogether, and regulate the ventilation on the returns.
5205. *Mr. Neilson.*] Have you any reason to believe that any of these doors were left open previous to the explosion? Well, I have no way of ascertaining that. There were boys stationed at the doors, and it was their duty to look after them. I only found a door neglected on one occasion. I generally found the boys attentive to their duty.
5206. You have no suspicion of any door being left open immediately before the accident? No.
5207. Is it usual to take any greater precautions as to the doors than you found at this colliery? No. In the best regulated collieries it is usual to have one in charge of each door, that is all.
5208. *Mr. Owens.*] I think you have stated that you consider the ventilation in Nos. 1 and 2 was sufficient to diffuse all the gas given off there? Yes.
5209. Then how do you account for the explosion? I account for it in this way: I think a shot had been fired in No. 2—an overcharged shot—and that a certain accumulation of gas was present in the roof or face. The shot ran out, and from the flame and coal-dust produced the explosion was caused.
5210. During your inspection at Bulli mine at any time did you see that the miners' lamps were locked and had been properly attended to. Well, I answered that yesterday.
5211. How often did you visit the mine? Periodically, about every eight weeks. I might be a week earlier or later, of course.
5212. You never found gas in any other part of the mine than these two headings, Nos. 1 and 2? I do not know that I ever saw fire-damp in Nos. 1 and 2 headings at all before the explosion. I did away down in the lower workings.
5213. Did you at any time receive a complaint from one, Hobbs, or any of the miners as to the condition of Bulli mine? Honestly I never did receive a complaint from any of the miners at any time. If I did, it has entirely vanished from my memory, and I have a pretty good one.
5214. How did you first become acquainted with the presence of gas in the Bulli mine? It was on one of my usual visits of inspection when they were working in the cinder coal. A certain quantity was being given off. They were then working with safety-lamps.
5215. Then the management did not inform you when gas was first discovered. Do you not think it was their duty to do so? Yes, I think so.
5216. According to your last report on Bulli mine, 12,000 cubic feet of air was passing the stenton between Nos. 1 and 2 headings, and you further stated that it would take 900 cubic feet of fire-damp to pollute that current of air or render it dangerous or explosive? Yes; it would take about 1,000 feet.
5217. You further stated that you thought it was quite improbable that Nos. 1 and 2 headings were giving off that amount of gas? Well, it has never been seen yet.
5218. But an explosion has taken place, and I now ask you how do you account for an explosion taking place under the circumstances in such a large volume of fresh air? I have already explained that I think it was caused by a shot in the first place, and the gas that might be in the roof or face assisted by the coal-dust converted into a gaseous state would account for it to my mind.
5219. Are you aware whether the roads were watered with the view of rendering the dust harmless? The engine plain was, I believe, not the headings.
5220. *President.*] Where did the engine plain end at the date of your last inspection? I cannot say precisely; it is shifted since, however.
5221. How far in? Several hundred yards. I cannot say from memory.
5222. *Mr. Jones.*] Presuming these parts of the mine were watered, would that in any way alter your opinion? Not very much. It would minimise it a little. This being a dry district, the dust would go all through the bords, and round everywhere; and then a shock or concussion would raise it even if the floor was a little damp.
5223. Considering the large quantity of air passing, does it in any way occur to you that one or more of these doors on the main heading, and that on the diagonal road leading to the flatt might have been open, and thereby contributed to the cause of the accident? No; I have no special reason to suppose so. You can go in the cross-cut now and you will have to go several yards off the cross-cut before you can catch it in the safety-lamp with only 1,000 feet of air passing.
5224. According to your own statement there was a very large quantity of air travelling before the accident, and scarcely a sufficient quantity of gas to show in the lamp, and yet we have had an explosion which has caused a considerable amount of destruction in the mine. How do you account for that? Simply because it was so confined. If a couple of sets had broken away it would have caused as much destruction almost as you see there.
5225. Did Mr. Ross ever report the existence in either of these headings of a blower of gas to you? No.
5226. To your own knowledge were boys always employed in attendance upon these doors? I cannot positively say that there was one at the western.
5227. Would you be surprised to learn that previous to the strike boys were not so employed? It is not to my knowledge. Since the strike I have spoken to the boy when I have been passing the western.
5228. Can you account for the singeing of the horse, Mr. Rowan? Well, I can say nothing but what I have previously stated. I am not so clear upon it as I would like to be.
5229. Was it ever suggested to you that a change in the weather had any material effect upon the ventilation? Well, that is an understood fact.
5230. Did it so operate? We have no barometers on the bank heads here, the same as we have in England, so I cannot say with certainty as to that.
5231. Do you think it necessary that each colliery should be supplied with a barometer? Yes; and there should be provision made for it in the new Act. There should be an instrument of that kind at every bank head, and the man who makes inspection of the mine should keep a register of it.
5232. I think you have already stated, Mr. Rowan, that you never made any inquiry as to the provision made for firing shots in this colliery? Yes; but I said that Mr. White gave me to understand in very clear terms that shots were to be done away with in the Hill End district.
5233. Do you think that the firing of shots in the presence of gas should be delegated to some authorised person? Yes.
5234. *Mr. Croudace.*] You said, Mr. Rowan, that you first came to the knowledge of the existence of gas in this mine when they struck the dyke in the Hill End district? Yes.

Mr. J. Rowan. 17 May, 1887.

5235. Are you aware that up to the present time that district has received the name of the "gassy section"? Yes; it is a very common thing in all places to give all kinds of names to particular parts of a mine; I have known curious names to be given, "the hospital," for instance.
5236. Do you not think that the name, "gassy section," is a signification of gas being in the division of the mine so designated? I do not think so, necessarily; it may have taken its origin from the fact of safety-lamps being used there.
5237. Are safety-lamps used as a rule where there is no gas? They may be used where gas has not been actually seen, but where a mere trace of gas has been seen I consider it a wise precaution to use safety-lamps.
5238. Do you know, of your own knowledge, of a blower being exhibited by means of a gas-pipe in No. 2 heading previous to the strike? I never heard of such a thing until after the explosion.
5239. Am I to understand, as I did just now, that in your examinations you never saw gas in any part of the mine, except in Nos. 1 and 2 headings? As I have said, it was only on occasions when new cuttings were being put into the face.
5240. Would that be in No. 1 heading? I cannot refer to any headings in particular.
5241. You think you did see gas in some other heading? Yes.
5242. Coming to the question of these doors, Mr. Rowan, do you consider that under any circumstances, with or without gas, single doors are as good as double doors for purposes of ventilation? No.
5243. Then, where gas exists, would it not be infinitely better to have two doors instead of one? Yes; I think so.
5244. You have further stated the opinion that it might be well to abolish the doors on the main road, and have regulators on the return? Yes.
5245. In the diagonal road leading to No. 1 heading, and between Nos. 1 and 2, did you observe some tubs lying off that road after the explosion? Yes.
5246. May it not have been possible for these tubs to have been off the road previous to the explosion? I do not think so.
5247. Do you think it impossible? No; I do not think it impossible.
5248. Did you see any place in the Hill End district where any second explosion might have occurred? No.
5249. Whenever there is any fear of gas in any leading headings, would it not be advisable to put up brattice between stenton and stenton into the face? Yes; it might be advisable to do that.
5250. Then, where gas is actually known to exist, would it not be better to erect brattice as they proceed? Yes; I think it would under certain conditions.
5251. I will ask you, under any conditions would it not be better as a matter of precaution to use the most efficient means of bratticing where gas is known to exist either in large or small quantities? Yes.
5252. In dealing with gas in a mine, I understand you to say, or to be of opinion, that the question of cost or expense ought not to be considered? Yes.
5253. You are quite clear on that point that no expense ought to be spared? Yes.
5254. In your visits to the furnace recently, or while travelling the return airways, have you ever seen any indication of an accumulation of gas in the old workings? No; and I have made extensive examinations of the old workings in company with three witnesses; I have gone over large regions of the old workings with a naked light, and have never discovered any gas.
5255. *President.*] One word about barometers; are you aware, Mr. Rowan, whether much dependence is now placed on barometers as an index in fiery mines? I am aware that it is a good index, but at the same time fire-damp is sometimes 10 per cent. quicker than the barometer.
5256. Are you aware whether changes in the weather take place before the barometer gives indication of such changes? Decidedly.
5257. Is the instrument sensitive enough for rapid changes of atmospheric conditions, or are you aware that changes in the weather will take place without any indication being given by the barometer for some time afterwards? Yes; it may be under certain conditions.
5258. In that case, would you say that much dependance is to be placed upon the barometer in England, say, as an index to danger? Well, I have found it a great guide there.
5259. In the event of a rapid change? I do not say that, as I have already stated fire-damp may be developed a long time before it is indicated in the barometer outside; nevertheless it is a great guide.
5260. If it does no good it does no harm? No.
5261. *Mr. Neilson.*] How were the timbers lying at the big fall? Portions of the timber seemed to be lying towards the Hill End district, and others were lying outwards.
5262. Was there any appearance of charring on the timber? A portion of it appeared to be calcined.
5263. Was the timber shattered at all? No.
5264. What would be the effect of an explosion of powder or dynamite? If it was close to the timber, of course it would shatter it. The effect would very much depend upon where the explosive was placed.
5265. *Mr. Hilton.*] You have said, Mr. Rowan, that you examined a large region with a naked light, and found no gas? Yes.
5266. Supposing you had come across a large body of gas under those circumstances? I was in the hands of two guides—Cavell and an old man who was almost born in the mine. They had passed through many times themselves, and it was convenient to carry a light.
5267. *Mr. Croudace.*] Do you not think it possible that there may be an accumulation of gas in a place where it does not show itself? Yes.
5268. Then how were these guides to know? Well, it was a low level where we were going, and you do not expect to find gas in low regions.
5269. Do you think it prudent for an inspector of collieries to examine the workings of a mine with a naked light? Well, I was not examining the workings in that way on this occasion—I was examining for royalty.
5270. Do you make your examinations with a naked light or a safety-lamp usually? There are mines where no fire-damp exists, and you would not have me go in with a safety-lamp in such cases.
5271. We have a report from Great Britain that an explosion occurred in a mine where gas had not been seen for some months previously, yet the colliery was worked with safety-lamps. Let me ask you again, Mr. Rowan, do you think that the examination of a colliery should be conducted with or without safety-lamps? I would not like to lay down a fixed rule. The condition in the Coal Mines Regulation Act provide

provide that where fire-damp has been seen for so many months, an examination shall be made by some competent person with a safety-lamp. Mr. J. Rowan. 17 May, 1887.

5272. Do you know whether there is a fairly good travelling way from the western district to the furnace? I have travelled it, but there is difficulty.

5273. A portion of the road is a good traversable airway, and then it is interrupted by falls? Yes.

5274. *Mr. Owens.*] What velocity of air would be required to render a Davy-lamp unsafe, where the atmosphere contains gas? It would require a velocity of 600 ft. per minute.

5275. You are aware that the haulage ropes passed behind the timber? Yes.

5276. A small fall having taken place, would it tend to produce an increased force? Yes. It would be like a stone coming out of a bridge—it would make room for the rest, and there being great tension on the rope the timber would fall in the direction of the strain. [*The witness withdrew.*]

Alexander Ross recalled:—

5277. *President.*] We have recalled you, Mr. Ross, as some little doubt exists with regard to the watering of roads in Bulli mine. Some of the members believe that, in your evidence on this point, you meant that the main roads were watered, while others believe that you referred to Nos. 1, 2, 3, and 4 headings, and the Commission wish to have this point cleared up? I meant the main roads. Mr. A. Ross. 17 May, 1887.

5278. Were Nos. 1, 2, and 3 headings watered? No; they were not.

5279. Another point—where did the haulage system end about the time of the strike? Inside Nos. 1 and 2.

5280. Before you extended it to that point where did it end? It was outside Nos. 1 and 2.

5281. How far was it extended? There was about 300 yards difference between the two. [*The witness withdrew.*]

John Dixon, sworn and examined:—

5282. *Mr. Clarke*]. You are the Government Inspector of Coal-mines? Yes; for the Northern district Collieries. Mr. J. Dixon. 17 May, 1887.

5283. For what period does your mining experience extend? Since my boyhood days.

5284. How many years? Thirty odd years.

5285. How long in the home mines? Four years.

5286. In fiery mines? Yes; the mine in which I first started was a very fiery mine—the Haswell Colliery in the county Durham—that was a very fiery mine.

5287. And you have had experience in this Colony? Yes.

5288. Did you ever visit the Bulli mine previous to the explosion? Yes; it was over four years ago, that was before Mr. Rowan was appointed inspector for this district.

5289. That was before the gassy district was opened out? Yes.

5290. How many times have you been in the mine since the explosion? Five times through the Hill End district and three times through the western.

5291. You made a thorough examination of the mine? I did.

5292. Particularly the supposed seat of the explosion in the gassy district generally? Yes.

5293. Did you at any time find gas in any quantities in any portion of the Hill End district? Yes; on Monday evening after the explosion I found about 23 yards of gas in No. 2 heading; it took the lamp 18 inches from the roof, 23 yards from the face that night.

5294. Did you find any in the other heading? Yes; a small quantity in No. 1.

5295. Did you examine the bords in this district? Yes; every bord, and I tested for gas in all of them and never found the slightest trace of it or any indication of it in any of the bords.

5296. You observed the destruction that was caused by the explosion? Yes.

5297. Can you give any theory as to the immediate cause of it? It looked as if the seat of it was in No. 2 heading of the Hill End district.

5298. What had occurred? A shot had been just fired in No. 2 heading.

5299. In the face? Yes; in the face.

5300. Which ignited the gas? Yes.

5301. Would that be an overcharged shot? I believe it has been what we call a pretty tight shot; I thought that from the look of the face.

5302. Did you think that the gas which exploded there was assisted by any other means? Yes.

5303. By what other means? The explosion was aggravated and intensified by coal-dust.

5304. Can you trace the direction the explosion pursued from the face of that heading? Yes; a part of it came through the stenton of No. 1 heading striking the fore side of the wall and licking both props where the danger-board is placed. It went along the danger-board and into No. 1 heading and looked into the nearest bord in its road, but not into the face of any of the bords, as we could find no traces of fire right up to the faces. The main force went along No. 2 heading playing the same part in and out until it reached the last bord; it then went down through the cut-through back among the empty skips standing there, out again, and part of it split through one of the stoppings; one part united with that which went around No. 1 heading, and the greater force went through the cross-cut, up through the back heading, and a part of it went into Nos. 3, 4, 5, and 6 headings. I believe the greatest force was exhibited where a horse was blown through a stopping.

5305. Do you think there was a second or third explosion? I have studied the matter and thought it out in every conceivable way, and I cannot locate a second or third explosion.

5306. You think that the big fall in the main tunnel had no connection whatever with a second explosion? None.

5307. If a second had taken place it would have left appearances and traces? Yes.

5308. Unmistakably? No doubt of it.

5309. Do you approve of the system of ventilation pursued in the Bulli Colliery? Well, that is rather a delicate question, for we all know the saying that we can all be very wise after a thing happens.

5310. What is your present opinion? Well, I can give an opinion if it is of any importance, although people will be ready to say he knows all about it now, but I think I know how the system could be improved.

Mr. J. Dixon. 17 May, 1887.

5311. Will you suggest any improvement in the present system of ventilation? Well, I believe Nos. 1 and 2 headings could have been formed into a separate and distinct split very easily. That would have done away with the door in the main tunnel by the overcast, which I can point out on the plan. I would continue the second bord to the first bord off No. 2 heading and across the main tunnel. I held that opinion when I first came down. Here [*pointing out place*] where I would form the overcast over the main tunnel and put a door at No. 2, which would send all the air away clear of everything else. My opinion is that this air had no right to circulate in any of the bords off the heading, being already somewhat fouled after supplying the heading.

5312. *President.*] It would serve the purpose of better ventilating Nos. 1 and 2? Yes; and it ought to have been done.

5313. *Mr. Clarke.*] Was it prudent to allow the use of naked lights in the bord on the return side? No; I do not think the air should have been carried to No. 2 after it had been in No. 1 heading.

5314. Do you approve of bratticing headings? Yes; by all means when driving such distances beyond the stenton.

5315. And in advance of the air-current? Yes.

5316. What is your opinion with regard to the firing of shots in the presence of gas or where gas is suspected or liable to show itself? I would certainly prohibit it altogether. I do not believe it is a correct thing to fire shots where gas is given off, for you don't know the moment that you might meet with a blower from a roll or other cause. I believe that blowers were occasionally met with and that sudden accumulation of gas occurred before the explosion.

5317. You have seen the large fall in the main tunnel? Yes; I have been all over it.

5318. Can you account for that fall? It is my opinion that for the most part it has been caused by the ropes jerking the props out. By the way in which the place was timbered you would only want to jerk one or two sets out and they would bring the rest down. Owing to the length of the timber between the cap pieces if one or two of the sets were displaced the probability is that it would bring the others down backward and forward. I believe that a great deal of the destruction in the main tunnel is due to the great tension placed on the ropes after the first fall had taken place.

5319. *Mr. Neilson.*] Would it be possible to place powder or dynamite on top of this 4 feet of shale above the sets? Yes; it would be possible.

5320. In sufficient quantities to do the damage? I could not say that it would be possible to place it on top and to displace sufficient timber to cause the fall.

5321. Do you think the fall is of sufficient area to stop the ventilation of the mine for any length of time? When I first examined that fall it was almost as close as that wall side [*pointing to the wall*]; it was a very close fall, so close that we could not see any distance beyond it.

5322. If there had been any heavy explosion of dynamite or powder would there be evident signs on the props? Yes; it would have shown itself downwards, especially if dynamite had been used.

5323. If dynamite had been used there would undoubtedly have been evidences of it? Yes; that is my experience. It would have powdered the hardest rock, for that is how it acts; if you fire a hole with dynamite it generally powders at the bottom; its peculiar feature is to strike downwards.

5324. You stated that your plan would be to bring the air down the inmost stenton? That overcast could have been placed opposite No. 2 heading for the purpose of getting the air out.

5325. You said that you did not think it was safe for any place to work with naked lights off these headings? If a place is giving off gas, my opinion is that the return air should be drawn immediately from it, and not allowed to go into the bords, as it is very impolitic to have naked lights between Davy-lights. I do not think that is a right thing, and I think the plan I suggested would have taken all the air away, as the remedy would keep each district separate and distinct. I can see a better plan than even that, which could be adopted there, that is, to put away a pair of cross-cuts and get your short headings off in other directions.

5326. Is not the course adopted the usual one all over the Colony? No. I know a colliery driving three main headings, and I believe in the three-heading system above any other. I believe it is better than any other system followed, and Mr. Neilson himself drives three headings at Wallsend, and a very good way it is too.

5327. Trappers being placed at these doors, is it possible that these doors could have been left open altogether, or if one was open, would not the others be likely to be shut? If the doors between Nos. 1 and 2 had been left open very little air would go up the heading. Perhaps the door on the main tunnel between Nos. 1 and 2 was open at the time of the explosion. That, I think, was indicated by the position of the horse. My experience of trapper boys is this, that they have to be kept in terror of a yard-stick to keep them at their doors. I have seen them 100 yards away, and they are particularly liable to leave their doors if there is a horse about to play with.

5328. *Mr. Hilton.*] Which is the best system of ventilation, having ventilating doors on the main road or in the return airways? It is a question which the greatest philosophers in England have not been able to decide yet, that is, according to my reading of the latest information. It was not a cablegram, but it is the latest news by mail. My own opinion is that there should not be a door on a main road, and if I do see one in my district I generally grumble about it till it is shifted.

5329. You would place regulating doors in the return airway as much as possible? Yes; the regulator should be placed in the return.

5330–4. *Mr. Owens.*] Assuming that there had been a big fall at the western junction and all the men were inside, which way would they get out? If the fall had occurred between the tunnel-mouth and the western door how could the men get out, seeing that there is no travelling way.

President.] We have not got that information; don't assume anything.

Mr. Owens.] We have information that it could not be travelled.

President.] We have also information that it has been travelled.

Witness.] Mr. White informed me that if we had liked to have gone on we could have got into the western. I have been up the road as far as where they were working at a pillar of coal. It is my opinion that if that road had been conveying a good current of air through and was clear of all falls the men would not have been got out in a fortnight, as the furnace would have been wrecked. It was owing to the distance which the air had to travel that so little wreckage was done in this part of the mine; and I am further of opinion that never in the history of the world have men been got out so quickly after such an explosion, where so many were killed.

5335. *Mr. Jones.*] Do you approve of a report-book being kept at every colliery? My opinion is that there should be a report-book kept at every colliery, and that every deputy and overman should enter daily reports in it, and that the inspector should look at it to see that they were carrying out their duties. I also think that the engineer in charge of ropes, cages, &c., should make daily reports. I have established this system of reporting in several places, and I find it is a good thing.
5336. You are aware that traces of gas have been seen in this mine ever since the Hill End district passed the dyke? I have heard so.
5337. You are aware that Nos. 1 and 2 headings were turned away very near the dyke? Yes.
5338. Would that be an additional reason for not allowing the air-course in Nos. 1 and 2 headings to ventilate any other portions of the workings? Yes. I believe that the most mischief is done by dykes where there is inflammable gas.
5339. *Mr. Croudace.*] By the dyke or the inflammable gas? Now, don't you try to catch me. I said where there is inflammable gas.
5340. *Mr. Jones.*] Do you think the small area of the workings had anything to do with the wreckage in the mine? I certainly do. It is the smallest area of workings I know of for the length of the main road, and I think that the confined state of the force had a great deal to do with the loss of life.
5341. We have been told that it was the custom to work with unlocked safety-lamps; was that a safe thing to do? It depends upon whose hands they were in.
5342. In the hands of any person? I know people in whose hands they would be safe, but I know others that I would not allow to use safety-lamps at all.
5343. Does not the law provide that they should be locked? Yes; in the presence of gas.
5344. And it was a violation of the law to have them unlocked? Undoubtedly.
5345. *Mr. Croudace.*] Knowing that there was gas present in the workings, would you consider it safe to tilt a safety-lamp for the purpose of lighting touch-paper? No.
5346. And still more unsafe to light a shot by striking a match? Rather.
5347. What would you think of sworn testimony that men worked in a heading where gas was known to exist with a hole in the top gauze of a safety-lamp? Well, I think he ought to have been placed were you and I were the other day—in East Maitland.
5348. Suppose it was known to the officers that such a lamp was used? It was very wrong that such a lamp should be allowed to be used anywhere.
5349. Quite culpable on both sides? By all means.
5350. You believe in places being bratticed? Yes.
5351. Now, coming to the question of these doors, seeing the doors were used, would it not have been better to have had them doubled? In that particular place you could not get double doors to work very well.
5352. Would it not have been prudent for the manager to have foreseen the necessity? In answer to that, you know what a bearing up door is, that is a door where the current depends upon it, and where there are such doors they should be doubled.
5353. Did you notice the second door in the diagonal roadway, and did you notice some tubs near it? Yes.
5354. Is it not possible that some of these tubs may have been off the road just before the explosion? Quite possible.
5355. If so, would not that have kept the door open—the door at the diagonal road open, if these tubs which were off the road were in the way of it? Yes; if they were against the door.
5356. Is it probable that this door might have been open at the time of the explosion? Highly probable. I thought that from the first.
5357. Coming from the western to the Hill End district, don't you think that there ought to be a good travelling road used as a return? Yes; my opinion is that in every colliery there should be a well-defined road for any man to travel, and at the same time, I would not confine the return air current to that road. Immediately the air is pitched into the return I believe in ventilating everything.
5358. If that had been so the wreckage of this explosion would have been greater? Yes.
5359. But you think the return airway should have one good travelling road? Yes.
5360. You are quite clear upon the seat of the explosion? Yes.
5361. That it arose from the firing of a shot in No. 2 heading? Yes.
5362. With reference to this lamp which was found only a day or two ago in the face of No. 2 heading on a canch on the left-hand side, do you think that lamp could have been used at the moment of the explosion by either of the men working there? No. I think I told you that I thought it was used by a man working in the heading when he was travelling out of the mine, and that he would light it when he put away his "glow-worm," as the light of a safety-lamp is often called. I arrived at the conclusion that a shot had been fired in the heading, and that nothing had been done there afterwards. I believe that from the fact that the tools, drills, picks, and scraper were found back from the face, and one of the men working in the heading was found in the stenton, and no body was found in the face of the heading. Putting everything together, I am firmly of opinion that the firing of a shot was the last thing done in No. 2 heading, and I believe that one of the men had been in the habit of carrying the lamp which he used to travel in and out of the mine so as to have a better light into the heading. I don't say that he kept it alight in there.
5363. Might not anybody else have carried it there? Yes; but that is my idea.
5364. Could this lamp have been placed there subsequent to the accident? Certainly.
5365. You don't think that this lamp has had any effect upon the cause of this explosion? I do not.
5366. You have given us the effect of the explosion; did you notice close to Nos. 1 and 2 headings two very delicate strings? I did.
5367. Were they singed, charred, or burnt? Not in the slightest.
5367½. If there had been any body of fire, would it not have completely consumed the strings? Yes.
5368. *Mr. Neilson.*] If Westwood and his mate cautioned their mates on the night-shift the evening before the explosion, to be careful with their lamps, is it probable that under the circumstances they would have taken a naked light into the heading? No; I believe the man who used that light to travel with put it in there simply to prevent anyone running away with it.
5368½. *Mr. Croudace.*] In view of the way in which men used lamps, are you of opinion that very stringent measures ought to be enforced to compel every workman to report such a state of things, and otherwise to prevent their occurrence? Yes; and I would strip them of all tobacco and matches, because I believe tobacco is one of the greatest curses about a gassy pit. I like a smoke myself, but I know too well what men will do for the sake of a smoke. [*The witness withdrew.*]

John Mackenzie sworn and examined:—

Mr. J. Mackenzie. 17 May, 1887.

5369. *President.*] You are Examiner of Coal-fields for the Colony, Mr. Mackenzie? Yes.
5370. After the accident on the 23rd of March you visited the Bulli Colliery? I did.
5371. And as a result of your visitation and inspection you sent in a full and particular report of your examination to the Department of Mines? Yes.
5372. To save the time of the Commission I propose that you read this report, on the understanding that you have liberty to supplement it by any additional statement you feel disposed to make. Will you be kind enough to read your report? [*Mr. Mackenzie reads his report, for which see Appendix.*]

5373. *President.*] This [*receiving the manuscript from witness*] is your report, Mr. Mackenzie. Do you desire to make any supplementary statement?

Witness.] Well, I have written a report as the result of an inspection I made yesterday, which I will read to the Commission. [*Mr. Mackenzie reads as follows*]:—

I made yesterday (Monday, 16th May) a close and minute examination of the Bulli mine, to see if it was possible to arrive at any other conclusion with regard to the cause of the disaster than that which I announced at the close of the late inquest. I was most anxious, if possible, to find ground for altering my conviction upon the subject, because I knew I stood almost alone in the view I took, and there was such an array of witnesses on the other side that it placed me in a position of apparent egotism to run entirely counter to their judgment. I therefore visited the mine, as I have said, with a desire to alter my views if I could find evidence which would justify their change. I regret to say that so far from finding anything to controvert my previously expressed opinion, I found evidences which more than ever confirms me in the opinion that the original seat of mischief was the heavy fall, however produced, at the bend of the Hill End incline plane, about 380 yards from the tunnel mouth. I found there unmistakable signs of a double and exceedingly fierce blast—one on the eastern side going to the tunnel mouth, and the other on the western side of the fall going to the interior of the mine in the direction of the Hill End and western districts. There is no mistaking the evidence offered by these mute witnesses of the catastrophe. The diverging currents are marked on either side of "the fall" by the torn ribbons of bark which stand at right angles from the props in the directions the blast took, also on the incline taken by the props as they were forced from their position, as well as by the angle at which cap-pieces lie that remain suspended by one prop only. These are themselves strong indications, but they are as nothing compared to the state of things revealed at the junction of the western road with the main tunnel. Here is to be found evidence which shows unmistakably that the destruction worked upon this portion of the mine came from the direction of the tunnel mouth, and therefore entirely contradicts the theory (and it is only theory) that the disturbing force came from a contrary direction, and as the result of a shot being fired in the No. 2 heading. The evidence to which I refer is that of the blowing away of the regulating door in the western heading, about 20 yards from its junction with the Hill End tunnel. Very little of this door or its framework and supports is to be found in its original position. It is blown to splinters and shreds; not out-bye towards the tunnel mouth, as they must have been if the theory I have alluded to as erroneous were correct, but in the opposite direction. I saw pieces of the door 66 yards inwards from its original position. At a distance of 3 yards I found that a slab about 6 feet long, which belonged to the door-frame, had been driven endways, diagonally, through a cracked prop, and the upper end was jammed in the roof at an angle of about 35 degrees. One of the hinges of the door I discovered twisted and bent like a ribbon. Around a prop at the left-hand side of the road, 9 feet distant from the original position of the door, the bolts and nuts bent, from which the woodwork had been wrenched; and at 53 feet, lying between the centre of the rails, I saw the other hinge twisted and distorted, and alike divested of any woodwork. These hinges were heavy in construction, being of $\frac{3}{8}$ iron 2 inches wide and over 2 feet in length, evidently made at the works, and their great strength, coupled with their present condition, shows the violent force to which they were subjected. The blowing in of the door entirely upsets what appears to be the received theory, and I give it as my deliberate conviction that the trouble had its origin in the vicinity of the tunnel mouth. The terrible disturbance and concussion at this point sent a current with the force of a whirlwind in both directions. That which went outwards bore with it the first heavy shower of debris which witnesses have described, and the other rushed inwards up the incline plane, carrying with it upper coal-dust lodged along the ribs, and opening out at the meeting of the rails at the junction of the western road, split into two currents, one-half hurling itself against the western door and carrying it away, and the other continuing its course along the Hill End district to Nos. 1 and 2 heading. Here the current, heavily charged with coal-dust, came into contact with the gas escaping from these workings, and possibly ignited at the naked light hanging on the danger-board near the stenton in No. 1 heading, and from there proceeded with terrific force down No. 2 heading. This being the seat of the second explosion which wrought all the remaining mischief, adding its force to the recoil of the first explosion (that would take place at this point), and eventually producing at the tunnel mouth the second but weaker outthrow, as described by Lang.

5374. *President.*] Were you in the habit of inspecting the Bulli Colliery at intervals? No; not at regular intervals.
5375. When did you inspect the colliery, before the 15th of March? I cannot say when; it was some considerable time before then.
5376. How long was it? I cannot say without reference to my papers.
5377. Was it months or years? Well, I do not think I had been in the year before.
5378. At the examination you made before the 15th March, with a knowledge of gas existing in the Hill End district, you did not examine that district? No. I have said so in that report; I did not go into it.
5379. You state in your report as a result of the 15th March examination that the returns were defective and untravellable. Did you make that statement of your own knowledge? No.

5380. Did you attempt to travel them? No.
5381. Upon whose information did you depend? That of the inspector for the district, Mr. Rowan.
5382. You did not desire the inspector or the manager to take you to the impediment on the return? No.
5383. What district did you visit on the 15th March? The western.
5384. The western only? I visited the western and the furnace.
5385. What was the object of these visits? The company are working coal in coal land for which they pay a royalty, and I went on that account principally, and to see anything Mr. Rowan might think it necessary for me to see.
5386. In visiting a colliery known to produce gas, did it not occur to you that it would be well if you satisfied yourself of the presence of that gas by personal inspection? As I have stated in my report, if I had gone there, the mine being at work, I should not have been able to see anything probably.
5387. Would it not have been some satisfaction to you to test the accuracy of the reports as to the existence of gas? Well, Mr. Rowan reported that there was very little gas—nothing dangerous.
5388. The workings at that time were of a very limited character,—would it not have been consistent with your duty to have inspected the Hill End district as well as the western? I do not think so in view of my inspector's reports to me.
5389. A portion of the western district is within Government land;—was it not part of your duty to inspect all workings within Government land? No; I do not know that it is.
5390. In your report you speak of an infringement of the provisions of the Act in reference to unlocked lamps;—did you state that from the evidence given at the inquest only? Yes; from the evidence at the inquest.
5391. You also state that Millwood was lax in the performance of his duty;—was that taken from the evidence at the inquest? Yes.
5392. Millwood was one of those lost in the mine—the statement is therefore of an *ex parte* character? Yes.
5393. Did you also at the inquest hear the manager and the overman examined upon this point, as to the orders given to their subordinates? That is, Mr. Ross, yes.
5394. Were they of a positive character? Yes; I think so.
5395. And from your own knowledge you are not aware whether Mr. Millwood carried out those orders or not? No.
5396. With respect to the cause of the explosion, I understand from your report that you agree with some witnesses that have been examined as to the seat of the explosion in Nos. 1 and 2 headings? As to the seat of one explosion.
5397. You are inclined, from your own examinations, to believe that two explosions occurred? Yes.
5398. The first explosion being in the main tunnel? Yes.
5399. Have you any distinct evidence of an explosion in the main tunnel? There appears to be strong evidence of it at the fall.
5400. In your report you give the circumstances of these explosions. You are inclined to believe that an explosion in the main tunnel occurred prior to a subsidiary explosion in the Hill End district. Could not the effects be produced by a fall of the magnitude we see there? No; not in my opinion. There is a centre there where anything is blown one way and another.
5401. Would not the force of debris coming down by a fall be as great as by an explosion? No; I cannot see that any fall there could possibly have caused such a fierce blast to go in opposite directions.
5402. To what cause would you be inclined to ascribe the explosion—to the ignition of certain explosives or an accumulation of gas? There could be no gas there to my mind.
5403. Then you fall back upon the other explosives;—in what way do you consider it possible? I cannot say.
5404. Have you any evidence of explosives having been used? No.
5405. You have described with some minuteness the damage to the western door;—could not the damage sustained by that door have been caused by the recoil of air after the explosion in Hill End? Certainly not, because in that case the force came outwards.
5406. Would the blast going outwards be in a compressed state? ——
5407. Then in going to the western door the space widens out considerably;—would that compressed air, or gas and air, be liable to expand suddenly on coming to a wider part of the road? I do not think so.
5408. Would it still go on in a compressed state? Yes.
5409. Could the damage to the door be caused by a fall of the magnitude you have described in the main tunnel? There are different falls. I believe this point [*referring to the plan of the tunnel*] to be the centre of the explosion, and the other parts fell afterwards.
5410. Would that have the effect of compressing the air out towards the tunnel mouth and in towards the workings? Yes.
5411. Would that account for the damage to the western door? Yes.
5412. With respect to the ventilation, you have accurately described the general scheme of this colliery. You had an opportunity of examining the plan before the accident? Yes.
6413. And knowing that gas existed in Nos. 1 and 2 headings, did it ever occur to you that a safer system of ventilation could have been pursued than the one they had? No; because my attention was never drawn to it.
5414. In the light of recent events, Mr. Mackenzie, are you of opinion that a safer system of distributing the air could be pursued in this colliery? Yes.
5415. In what way? In the western district I would have two doors instead of one, and there might be an overcast from the Hill End district into the return.
5416. And make the return direct into the main return? Yes.
5417. *Mr. Neilson.*] You say there are a number of falls in the main tunnel;—do you think they all fell simultaneously? I cannot say that. Of course we know the roof has been falling since. They would not all come down at once.
5418. *Mr. Hilton.*] How long ago is it since gas was first reported to you in the Bulli mine? It was in November, 1886. Mr. Rowan reported it in his report of December, 1886.

Mr. J. Mackenzie. 17 May, 1887.

5419. You know, according to your own statement, that gas was present in dangerous quantities? I did not say that. I said I knew gas was there.
5420. To-day there may be a small quantity, to-morrow a large quantity? Yes; but I say it has only been reported to me as being present in small quantities. The inspector did not consider there was a dangerous quantity there.
5421. Is it not possible that the quantity given off there might become larger in the course of a day or two? Yes.
5422. Was it or was it not your duty, knowing that gas existed in the Bulli mine, to visit it for the purpose of seeing that the workings were in such a condition that the management would be able to cope with a larger quantity of gas, in the event of a larger quantity being given off? No; it is the duty of the inspector to do that, or report to me.
5423. Section 4 of the Act, as to "Duties of Examiners," says, "it shall be the duty of the Examiner or inspector to ascertain the state and condition of all mines," &c. Do you rely wholly and solely upon the inspector for reporting everything to you in connection with mining matters? No.
5424. That being the case, I ask again, as you knew that gas existed in the Bulli mine, did it never occur to you to visit the mine, and ascertain for yourself whether due precautions were being taken to meet with a possible increase of gas? No; I have a competent inspector to go round every eight weeks, and I read his reports when they are sent in to me. I ought not to have any occasion to go.
5425. Then what are the duties of the Examiner? The Act tells you what my duties are. I am the head of the coal-mining department. The inspectors go round the mines every eight weeks, and they report to me, and if anything requires my attention at any place I go there. It would be impossible for me to go through every mine in the Colony.
5426. *Mr. Owens.*] Would you explain to me how this second explosion, as you put it, was brought about? I have explained that everything from this centre in the main tunnel was blown outwards and inwards for a certain distance, and the coal-dust would be carried with the blast.
5427. Did it ignite? The coal-dust and gas together. There would be 2 to 3 per cent. of explosive gas in Nos. 1 and 2 headings, besides what was in at the far end.
5428. And do you mean to say that the coal-dust driven by the force of this fall into Nos. 1 and 2 headings is the explanation of the second explosion? Yes.
5429. Do you think there was any accumulation of gas in the old workings? No; there could not possibly be, because no gas was seen until they crossed the dyke. I wish to say further this: There appears to be an impression that the gas could separate itself after once being mixed with the air, and go into the old workings, whereas if no gas was made there it could not get there from the headings Nos. 1 and 2.
5430. *Mr. Jones.*] In your report you say on going up the tunnel the cap-pieces showed signs of being driven inwards? No; I said of them.
5431. Are there not a number of cap-pieces showing signs of being driven outward? Yes; that would be from the recoil that took place from the explosion in the Hill End district.
5432. Would not the haulage ropes, being attached to the timbers, and in some instances passing behind them, have a tendency to determine the position of the timbers, supposing a small fall to have taken place, and caused a tension on the ropes? Yes; it might do with some of the timber, but not the whole of it. It would not affect the pieces I have specially referred to.
5433. You have stated that you depended upon the evidence at the inquest for your remarks upon the lax discipline at this colliery? Yes.
5434. Have you any reason to doubt the truth of the evidence? No.
5435. You think there could not have been enough gas in Nos. 1 and 2 headings to cause the whole of the destruction you saw? Certainly not.
5436. If either of these doors—the one on the main road, or the one in the diagonal cross-cut leading to the Flatt—were left open for a short period, would not that allow of gas accumulating in Nos. 1 and 2 headings? Well, yes; but they were not open. This door at Nos. 1 and 2 was shut.
5437. What evidence have you of that? The position of the doors prove it. The frame-work of one is still hanging. If the doors had been open they would not have been damaged.
5438. On the diagonal road leading to the Flatt there is a train of empty skips? Yes.
5439. Presuming that they were passing at the particular time of the explosion, would not that allow of them being open? I tell you it was not open—you can see for yourself. [*Refers to plan.*] The set is clear of the door.
5440. Subsection 3 of the 24th clause of the Coal Mines Regulation Act says, as to the powers of Examiners, that they may "examine into and make inquiry respecting the state and condition of any mine or any part thereof, and the ventilation of the mine, and the sufficiency of the special rules for the time being in force in the mine, and all matters and things connected with or relating to the safety of the persons employed in or about the mine or any mine contiguous thereto." When you last visited the mine, I understand you knew that the Hill End district was giving off gas? Yes; a small quantity.
5441. You have further told us that you are the head of the department whose duty it is to see that the provisions of the Coal Mines Regulation Act are carried out for the safety of the men? Yes; with the aid of the inspectors I do that.
5442. Being in the mine, and knowing from the reports of Mr. Rowan that this portion of the mine was giving off gas, did you not consider it your duty to personally inspect that portion of the mine? No; not after what Mr. Rowan had told me. I put a question to him on the subject, and he told me that there was so little gas there that while the men were working I would very likely not see anything.
5443. *Mr. Croudace.*] Will you kindly tell me what is really your opinion as to the cause of this big fall? I cannot say; it appears to me to have been an explosion. I do not see how an incidental fall alone could do it.
5444. Could it have been brought about by an explosion of gas there? No; not by gas, as there could not have possibly been any there.
5445. By powder or dynamite? I could not possibly say.
5446. Have you any reason, from information received from the inspector, or from information received from any other person connected with this mine, to lead you to believe that it was not caused by the explosion of gas? It could not possibly be an explosion of gas, as there has never been any found until we got into the Hill End district.

Mr. J. Mackenzie. 17 May, 1887.

5447. Supposing it was brought about by an explosion of gunpowder or dynamite, would there not be a report as that of a large cannon? There was a report, I am told, as if a large quantity of sticks had fallen, and one witness has said that he thought it was a large tree that had fallen.
5448. A rumbling noise? I don't know what it was myself, but it has been represented as like falling of trees.
5449. If a barrel of powder or a heavy charge of dynamite exploded, would not the report be like that of a cannon? I did not hear it, but I should think there would be a report.
5450. Have you ever heard an ordinary miner's shot? Yes.
5451. Does that not go off like a gun? Yes; but it would entirely depend on the quantity of powder put into it. My own opinion is that there must have been some explosive there to cause this wreckage, and that a fall itself would not so displace the timbers as I found them.
5452. If there was an explosive used there would be a very heavy report—such as that of a huge cannon;—you admit that? I could not say how it would be where that fall took place. It is a long way inside the tunnel, and it is hard to say whether a report like that of a cannon would be heard outside.
5453. Is the report of powder or dynamite not a sharp, quick sound, as if a gun went off? Yes; but I cannot tell how it would sound 380 yards in from the tunnel mouth, and with a bad roof above it.
5454. Have you ever heard of an explosion of powder bringing down that amount of stone? Not the whole of it; but if the props were displaced that would increase the amount.
5455. Have you ever seen a fall take place in pillar workings? Yes.
5456. Can you tell me the result of a sudden heavy fall upon the atmosphere? It will sometimes blow stoppings out, and in that and other ways will affect the ventilation of the mine.
5457. Have you ever seen an ordinary bord fall 30 or 40 yards long and 7 or 8 yards wide? Yes; and I have seen very large falls which have taken place in the Co-operative Colliery, in Newcastle.
5458. Is the effect there like this? No; nothing like it.
5459. You believe that when this fall or explosion took place there was immediately a tremendous blast of air going in? Yes.
5460. And that blast was sufficient to blow away the western door, doubling up the hinges of the door, and that another portion of the blast went down the main tunnel? Yes.
5461. And that it was of sufficient strength not only to blow away the door, but to double up the hinges, as you have described? Yes.
5462. Now, as a matter of fact, would not such a force immediately put out every light in the mine, naked or otherwise? I don't know what lights were there.
5463. Don't you think it would? I don't know where the lights were. We don't know, as far as the western headings are concerned, that there were any signs of burning there.
5464. I don't care twopence about the western, before or since the explosion. I merely ask you if you think the power which would blow away a door and double up its hinges would not be sufficient to put out all the lights? I presume it would in the western district.
5465. Would it not in the Hill End district? I don't know that it would, for there is another fall between the very heavy fall and the Hill End district.
5466. Would this fall not assist the large fall in doing so? The other fall might have closed before the blast smashed the western door.
5467. But let us get to the point. Don't you think that this volume of air, carrying this coal-dust, smashing the western door and skips to pieces, would not that power be sufficient to put out every light in the Hill End district? I don't know that it would, because of this fall between the western and Hill End might have closed before the force reached it.
5468. Did these other falls take place from the explosion of gas, or are they the result of the first fall? I believe it was simultaneous with the blast.
5469. Did the blast of the large fall get beyond the smaller falls before they occurred, or did the force go over the top of them? Some of the force would get through, perhaps, but not the whole of it.
5470. But suppose a moderate quantity went in, would not the effect be to blow out the lights? It might not, for if the lights were much beyond the fall the force would not likely blow them out.
5471. You think, then, that this great blast would not likely blow out an ordinary lamp? I say it would blow out all the lights in the western district.
5472. But not in the Hill End? I have told you the fall might have prevented it.
5473. But you do say that it would not blow out the lights in the Hill End district? I don't say that all of the lights would keep burning. It might blow out those this side of the stenton.
5474. How do you think the second explosion took place? A quantity of dust might have gone through there, and this might have been ignited at the naked light which I have referred to, and that an explosion of gas occurred in No. 2 heading on the other side of the stenton.
5475. You admit, then, that the cloud of dust then went over the fall, and that this dust ignited at the lamp. Don't you think that the power which blew the dust there would blow the light out? My opinion is that she did not blow the light out.
5476. You would lead us to believe that the power which carried the dust did not blow the light out? Yes.
5477. Is such a thing possible. Is it really creditable? I think so. There were a number of naked lights in the bords.
5478. I only ask you to reflect for one moment. What you are asking the Commission to believe is that the lights could not have been blown out? I say that the force of the blast would not go into the bords to the same extent, and that it might not have blown them all out.
5479. Between No. 1 heading and the dyke, are there any signs of flame? No.
5480. Is there any debris on the main tunnel inside the western? No.
5481. Are there any signs of charred coal-dust in there? I think not.
5482. Then how do you reconcile this blast leaving the return from the western to the dyke free from signs of fire? Because she went round the return to the western.
5483. Are there are any signs of any fire at all in that route. You can see that she did not go down.
5484. Are there any indications of charring on the props between the dyke and the western district? I cannot say.
5485. In your evidence you charged Millwood, the deceased deputy, with being negligent. That, of course, means that White, the overman, had been also careless, as well as Mr. Ross, the manager, in really allowing Millwood to be careless? I am judging only from the evidence. 5486.

Mr. J. Mackenzie. 17 May, 1887.

5486. We have sworn testimony that the western door was in existence up to the very hour of the explosion; that No. 1 door, that is the first between Nos. 1 and 2 headings, is in all respects the same; that the diagonal door in No. 1 heading was identically the same before and after the explosion; that No. 3 door in this district, between Nos. 3 and 4 headings, was also the same; that there were trappers kept at these doors, with the exception of the western door; and that, since the strike, these trappers have been systematically and regularly employed. Now, would that show less attention to these doors on the part of the overman or deputy after the strike? No; that is not the laxity I refer to.
5487. Since the strike we have evidence of a great improvement in ventilation, by the erection of a new furnace; so much was it improved that we find 12,000 cubic feet per minute, where previously there were only 3,000 or 4,000 cubic feet;—does that show any laxity? No.
5488. We also have it that the safety-lamps were locked previous to the strike by Crawford, but that they were not locked at night-time by him. Since the strike we have it that they were neither locked day or night. Is that the laxity you refer to? Yes.
5489. That is where the greater laxity comes in? Yes; in the men being allowed to take the lamps in unlocked.
5490. Has that anything to do with the bords off No. 2 heading, which were being worked with naked lights? Yes.
5491. You think that is not desirable? I do.
5492. Is there any other source of laxity that you can point out to us? Nothing in addition to what I have stated.
5493. Then, having been made acquainted that gas was coming off in this mine, did you attach so little importance to it as to render it unnecessary for you to visit the colliery specially to see it? Yes.
5494. Did you not think, knowing that our mines had been hitherto free from gas, and that being a new feature and a dangerous element in mining, did you not think it desirable to visit that gassy district, if only with a view of cautioning the management? I had no cause. Of course I had no idea that there was so much as there was, and you must bear in mind that gas has been found as far back as 1864 in the Bulli mine, and that some time later than that a man was killed there from the effects of a small gas explosion. So this was not by any means the first time that gas was found.
5495. Knowing that a man had been burnt in the Bulli mine many years ago, and that gas was again showing itself, did not that lead you to think that it was necessary for you to personally go down and warn the management of that mine? No.
5496. It did not? No. It was only reported in small quantities.
5497. *President.*] I am very anxious to have a clear understanding from you with reference to the large fall in the main tunnel, and I see that my colleagues have not touched one point in connection with it. You have clearly described the condition of the western door, and assigned as the cause that the blast or compressed air would travel from out-bye to in-bye—is that so? Yes.
5498. This current of air, rolling in the main tunnel, you stated would have a tendency to divide at the western? Yes.
5499. The door giving way before it would allow a portion of that blast to proceed down the western road, and the other portion would proceed down the main tunnel and into the bords of the Hill End district? There was a fall between there.
5500. Have you any evidence that this fall occurred before the blast reached it? At the time, I presume.
5501. Then the bulk of the blast must have entered the Hill End district before that fall occurred, if it was the result of the force supplied? Yes.
5502. You have accurately related the condition of the door on the main tunnel between Nos. 1 and 2 headings, and that at the present moment it stands on an incline, or opened partially towards out-bye? It is broken to pieces, and only some portions of the frame are left.
5503. In what direction would that door have been blown had it arrested the force of this blast from out-bye towards in-bye? If the explosion had occurred first in No. 2 heading, I should have expected to have seen that door blown away altogether, the same as in the western, but there has evidently been less force there than in the western.
5504. If that blast had been as far as you have narrated, where would you expect to find the remains of that door? She had spent herself before she had got there, for at that time the blast had gone 500 yards.
5505. What direction should that door be blown if the force came in-bye? The same as the western door. It would have had been blown in-bye if the force had been as great as at the western.
5506. Suppose it was not as great, in what direction would you expect that door to be blown by any force at all, out-bye to in-bye? I did not expect that there was a great force here.
5507. You say it was sufficient to go down and reach a naked light there, and, if so, would not that door have arrested the force? She would not have the same force there as elsewhere.
5508. But would not the door give some indications of the directions of the force? Yes.
5509. Was it so little as to leave the door intact? It is not intact.
5510. Do you think that this door would show that it was blown from the inside if the force came the other way? I do not think the force was sufficient.
5511. Would it take much force to displace a large door like that? I could not say how the door was fixed.
5512. Would it likely resist any considerable force? I think the force had spent itself before reaching there.
5513. Don't you think the position of the door was rather against your theory? I think it substantiates my theory that she came this way and recoiled.
5514. *Mr. Neilson.*] Can you define what you mean by an explosion at this place some 380 yards from the tunnel mouth? Some explosive material has been fired, that is my opinion about it.
5515. Is there any evidence of it on any of the props about there? There is coke to be seen on them on the out-bye side, and I ascertained that there is coke to be seen on the props on the other side of the fall.
5516. Are there any of the timbers about there much shattered? They are blown in different directions, some in-bye, some out-bye.
5517. As a man of experience, I suppose you know that if there had been a large explosion such as to cause all this damage which you have described, there would be some evidences of powder or dynamite in close proximity to it? I cannot tell; I can say nothing more concerning it; I have given you my opinion.

5518.

Mr. J. Mackenzie. 17 May, 1887.

5518. Would you not naturally expect such to be the case if powder or dynamite had done this damage; would there not be direct evidences of it? I could not say; I have given my reasons for thinking so; I cannot say anything more.
5519. If this explosion in the tunnel occurred first, and it extended right into the western and Hill End districts, what caused the second explosion? It might have been caused by the coal-dust that was driven in there.
5520. You think that the first explosion would have the effect of compressing all the air? Yes.
5521. Would it be fresh air? It would take up the coal-dust with it.
5522. What would it do with the fresh air before it? The blast would collect the dust as it went along.
5523. But would there not be a certain proportion of fresh air before the dust? I do not think so.
5524. If the force could knock down skips, doors, and create big falls, would it not also put out the naked lights? How could the western door be blown in by an explosion coming out from the Hill End district. The western door is blown away, and I believe shreds of it have been found 66 yards away inside the place where the door stood.
5525. *Mr. Owens.*] Did you at any time see gas in the Bulli mine? No.
5526. You never saw it yourself? No.
5527. *Mr. Hilton.*] When was the last time you were in the Bulli Colliery? The 17th March.
5528. Are you certain? I am not certain; I think it was the 15th or 17th that I was there.
5529. February or March? Some time in March.
5530. How long previous to that were you there? Last year, perhaps; I do not know exactly.
5531. At any time has there been anything to specially cause you to visit the Bulli Colliery? No; I believe I was there (when I come to think of it) less than a year ago, but I cannot keep all these things in my mind. [*The witness withdrew.*]

Joseph Poppett miner.

Mr. J. Poppett. 17 May, 1887.

5532. *President.*] Mr. Poppett, you desire, I understand, to correct the statement made by witness, Mr. Evans? Yes; and I will make the contradiction on oath if necessary.
5533. The proceeding is rather irregular in this way, and if we commence to allow one witness to come here to contradict statements made on oath by another there will be no end or finality to this inquiry. The statement made by Mr. Evans had no reference at all to the cause of the disaster. With me it is forgotten; it will have no weight with me whatever; and I believe it was wrung unwillingly from the witness; and I believe that if the Commissioners had known what Mr. Evans was going to say the statement would not have been made; however, you appear to give a contradiction to it? Yes; and I will swear there is no truth whatever in the statement.
5534. Very well, then; that will be taken down, and a remark made that you appeared and contradicted it. *Witness.*] I do contradict it.

This concluded the list of witnesses thus far summoned.

President said: It has been determined to adjourn this inquiry for a time, meanwhile, any communications from persons desirous to be examined on matters touching the accident at Bulli Colliery, addressed to the Secretary, at the Mines Office, Sydney, will receive due attention.

The Commission then rose.

TUESDAY, 7 JUNE, 1887.

Present:—

J. O'MALLEY CLARKE, Esq., Acting President.

Mr. NEILSON, Mr. CROUDACE, | Mr. JONES, Mr. OWENS,

Mr. HILTON.

Alexander Ross sworn and examined:—

Mr. A. Ross 7 June, 1887.

5535. *Chairman.*] The Commission wish to ask you a few questions upon your former evidence, Mr. Ross. Can you give us the exact orders that you issued to Mr. White and the deputy with respect to the locking of the lamps? I cannot exactly.
5536. The orders you gave to Mr. White for instance, did you give him any positive instructions? I cannot say that I gave him positive instructions, unless it was to see that the lamps were locked.
5537. And as to Millwood? He had similar directions.
5538. Did these orders as to locking the lamps extend to the night-shift as well as the day-shift? Yes.
5539. The locking of the lamps for the night-shift was under the immediate supervision of the deputy—that is the deputy was to lock them? Yes. And here I may say that when I last gave my evidence I was a little confused about the question of the key being left in case any of the lights went out. I did not remember that when I gave my evidence before. It was only for the use of the night-shift men.
5540. Did you make any inquiries as to the carrying out of your orders? No; not specially.
5541. How often were you in the habit of inspecting the mine at stated periods, if you did inspect it periodically? I had no stated periods. Sometimes I would inspect it once or twice a week; sometimes once a fortnight—just as occurrences turned up, or something demanded my attention.
5542. From your knowledge of the gassy district, did it ever occur to you that it was necessary to use bratticing there? I did not think so.
5543. Did Mr. White ever express any desire to have bratticing in any of the headings? Not that I remember.
5544. If he had expressed a desire to use bratticing, would you have ordered it? I would have acted on his suggestion if I had thought it necessary. 5545.

Mr. A. Ross. 7 June, 1887.

5545. Did he ever make such a suggestion? Not that I remember.
5546. Do you know the extent of the air current that passed into the western district before the strike? About 4,000 feet, more or less.
5547. And into the gassy district? About the same amount.
5548. Of your own knowledge, do you know whether any of the bords off No. 1 heading ever gave off gas? They gave off gas before the strike.
5549. And afterwards? It was never seen afterwards to my knowledge.
5550. *Mr. Neilson.*] Is it the custom when a general order is given in regard to the working, and the officers and men are supplied with the rules, to discuss these matters daily or weekly with your officers? It is not the practice, unless I suspect that the general orders are not carried out.
5551. You presume that having the rules and receiving general instructions they will carry out your instructions? Yes; I take it that is as it should be.
5552. How many men were on the night-shift? Eight men.
5553. What was the reason you had not back workmen on the night-shift? There were so few men I did not not consider it necessary. These men I considered to be practical miners.
5554. Am I to understand you specially selected them as practical men? I tendered the headings for the purpose of getting practical men.
5555. Did you know any of these men? I knew them all.
5556. As practical men? Yes. These were all old hands.
5557. *Mr. Owens.*] Did Mr. White report to you the result of each day's work every day? I saw him every day, and he would report anything that it might be necessary to report.
5558. Did you examine the face of No. 2 heading after the explosion? Yes.
5559. Are you of opinion that a shot had been fired there? I am sure there had been, and that it was a partially blown-out shot, because there was 10 or 12 inches of coal left on, and the back of the hole is intact.
5560. How often did the overman travel the return airway? I cannot say, because before the strike we had a man to travel the western. He worked in the waste, and another man was appointed to go with him and make it right where necessary.
5561. *Mr. Jones.*] Did you engage the whole of the workmen employed in the mine? Yes.
5562. No other person had the power to employ them? No.
5563. Did you explain to the men on being engaged the risk or danger likely to accrue to them from the existence of gas in the mine? No.
5564. You never gave them instructions as to being careful or attentive for their own safety? Well, not particularly. I might on some occasions perhaps.
5565. You did not explain to them that gas existed, and that it was a source of danger? No.
5566. Did you ever use brattice in any part of the workings? We use brattice in going through the dyke.
5567. You thought it necessary then? Yes; until we got a return.
5568. But you did not consider it necessary in the case of Nos. 1 and 2 headings? No; not after the strike.
5569. Was not the practice of having a lamp-key for the men employed at night a violation of your own rules? Well, perhaps it might be to some extent.
5570. It was important, I suppose, in the interests of the colliery that these men should be employed at night? It was important in this way, that we required more places to be opened out.
5571. But in the light of what has happened, and the admission on your own part that a rule was violated, do you not now think it right and proper that the deputy, or some other authorised person, should be placed in charge of the mine during the night-shift? I can only say that I did not think it necessary on account of the small number of men employed, and the fact that they were all practical men.
5572. Did your business as manager of the colliery ever take you away from home? Yes; it did sometimes, for one or two days perhaps.
5572½. Then how were you to ascertain on each and every day what took place at the mine? If I were away from home of course I could not ascertain.
5573. *Mr. Croudace.*] Did Crawford ever suggest to you the advisability of using brattice in any part of the mine? Not that I remember.
5574. And you yourself did not consider it necessary? No.
5575. In view of what has recently occurred, Mr. Ross, would you consider it necessary to use brattice? Yes; I would use it now on account of what has happened.
5576. Have you been clearing away the big fall at the mouth of the tunnel, Mr. Ross? Yes; we are clearing it now.
5577. Have you observed any indications of a large body of gunpowder or dynamite or other explosive substance having been used? No; I have seen nothing to suggest anything of the kind. There have been a number of fresh falls from the roof there since the explosion.
5578. That would lead you to believe that the stone was of a tender or free nature? Yes; no doubt it is of a tender nature.
5579. And would be very liable to fall through concussion? Yes.
5580. *Mr. Hilton.*] Were the danger-boards fixed in Nos. 1 and 2 headings put there at your request? Yes; they were to be put at the last stenton to prevent any one going further with a naked light.
5581. *Mr. Neilson.*] Would not the rules of the colliery compel the overman to put these danger-boards up without your orders, if necessary? Yes; and he did so.
5582. *Mr. Jones.*] Was it the practice to place the danger-board from stenton to stenton? Well, this was the first time it was placed at the stenton, because previous to the strike we worked with Davy lights in all these places; we had it further out before; but on account of the large increase of ventilation we thought it was quite safe to work the bords with naked light. I may state that Mr. White and myself went through every hole and corner of the Hill End district yesterday, and we did not find a particle of gas in any place, except at this barehole, where the shot was fired in No. 2 heading.
5583. The ventilation, I suppose, is in a great measure restored now? No, not in there, because we have done nothing to the stoppings yet.
5584. *Mr. Croudace.*] You say you travelled all round this district and did not find any gas, except a trace in No. 2 heading, have you brattices up in the face of the headings now? In Nos. 1 and 2. 5585.

Mr. A. Ross. 7 June, 1887.

5585. Did you try the experiment of taking away the brattice to see whether gas would accumulate? No.
5586. Do you think if you took away the brattice it would probably accumulate? Probably.
5587. That would show the advantage of brattice? Yes. [*The witness withdrew.*]

[NOTE.—Mr. Ross adds a remark with reference to the skips on the diagonal road, to the effect that the skips were apparently coming out of No. 2 heading, and not in the position where the "diagonal" door stood, so that the door would not be open through skips being there.]

Richard White sworn and examined:—

Mr. R. White. 7 June, 1887.

5588. *Chairman.*] You have been recalled, Mr. White, to clear up certain points upon which the Commission are in some doubt; can you tell us the exact orders you received from Mr. Ross with reference to the locking up of the lamps? I cannot, except that I believe that he has told me to be careful, and see that the lamps were locked on all occasions.
5589. What orders with reference to that did you give to the deputy? I gave him the key, and told him to be sure and see that the lamps were locked before giving them to the men.
5590. Did your orders extend to the night shift? Yes; I impressed upon him several times to always see that the lamps were locked.
5591. Did you know where the key was kept? No.
5592. Did you ever inquire as to whether your instructions were carried out with reference to the locking of the lamps? No, I did not; we had not very long started to work.
5593. Then you did not know that the men were working with unlocked lamps, as a matter of fact? No, sir, I did not.
5594. Did you ever consider the use of bratticing necessary? Well, I always considered it a useful thing, but I did not consider it necessary there.
5595. You did not suggest its use to the manager? No.
5596. Did you ever hear of any rumours that an accident was likely to occur from the mode of operations carried on in the mine before the disaster took place? Well, I did hear Crawford say when he was going away when the strike commenced, that the mine would likely blow up some day, but I did not think anybody believed it.
5597. You did not attach any importance to it? No.
5598. Was Crawford the only person who made use of such an expression? No, I believe a good many more of them did.
5599. But to you did any one else make such a remark? No; nor did any of them make use of such an expression when they were happily at work. I believe it was only to intimidate the strangers from working there.
5600. *Mr. Owens.*] You give that as your opinion? Yes; you may take it for what it is worth.
5601. *Mr. Hilton.*] Were the danger-boards fixed in Nos. 1 and 2 headings by instructions from Mr. Ross, or upon your own authority;—did Mr. Ross give you instructions? Yes.
5602. *Mr. Owens.*] Do you know what reason Crawford had for saying that the pit would blow up one of those days? Yes; I believe I do.
5603. What was his reason, Mr. White? Well, I believe, he went away in a very bad frame of mind.
5604. Was there any other reason? No; he might have a dozen reasons, for all I know.
5605. Do you not think he might have been simply influenced by the knowledge that there was gas in the mine? No; I do not think so.
5606. How often did you examine the return? Every day I examined parts of it, more or less.
5607. You are the overman at Bulli Colliery? Yes.
5608. The rules say you shall examine the return every morning and evening? Do you mean right through?
5609. Yes? I never heard of such a thing.
5610. You did not do it? No.
5611. You had a man for the purpose of looking after the waste? We had two.
5612. After the strike? Yes, and before the strike.
5613. Was there a master wasteman? Yes.
5614. *Mr. Jones.*] You have stated that you were not aware of the lamps being unlocked after the strike? Yes.
5615. In your visits through the mine did you ever make any inquiries of the men on that subject? No.
5616. Did you engage any of the men in the colliery? No.
5617. It would be your duty, I suppose, to show the men to their working-places? Yes.
5618. Did you ever explain to them the danger to be apprehended from the existence of gas in the mine? No; I have asked them if they had ever worked in gas, and so on. I cannot call to mind everything I may have said.
5619. Before he left did Crawford ever suggest to you the use of brattice in these headings, Nos. 1 and 2? No.
5620. It has been stated that Crawford, on leaving the employ, told you that unless great care was exercised the mine would blow up some day? Yes.
5621. And you believed that in making that remark he was actuated simply by a spirit of vindictiveness? Yes.
5622. And you still believe so? Yes.
5623. In the light of what has happened do you believe that Crawford had no foreknowledge, or that he was not reasonably justified in making such a statement? No, not the slightest. As a matter of fact more care was taken in that place after he left than before.
5624. Does not that prove, very forcibly, the truth of what he said? No; it might have happened at any time. Things like that cannot be accounted for.
5625. Unfortunately the fear expressed by Crawford has been realised—does not that convince you that there was something more than vindictiveness in his statement? No.
5626. *Mr. Owens.*] Have you examined the face of No. 2 heading since the explosion? Yes; a number of times.
5627. You stated in your former evidence that you were of opinion no shot had been fired there? I do not

Mr. R. White. 7 June, 1887.

not think I said that; I thought that a shot was fired on the right-hand side, but not on the left. A hole had been started there, and part of the coal was standing at an acute angle from the face. The facings went from left to right, and probably the shot only brought down a portion of the coal.
5628. Did they keep a cut on one side and simply tear it down, or did they put shots on both sides? Sometimes they would fire at both sides, and sometimes not. This coal is jointed, and sometimes it is necessary to fire at one side and sometimes at another.
5629. *Mr. Croudace.*] I should like to be clear about Mr. Crawford's statement to you. I understand he told you if they were not careful he believed an explosion would take place? It was on the last day he worked there. He came outside and he told me then, when he was going away.
5630. It was after he had actually come out of the mine that he told you this? Yes; he told me that if the waste got fouled at any time the pit would be likely to blow up. But I could have told him that myself.
5631. That would be on the supposition that a naked light was taken into the place? Yes, I suppose so.
5632. Did he receive notice from the Company to leave before that? No, I think not.
5633. Had his wages been reduced? Yes.
5634. Was he dissatisfied? Yes, he had expressed great dissatisfaction.
5635. Did he offer to work on at the reduced wage? No.
5636. He joined the men that went out on strike? Yes.
5637. Did he on any day previous to that speak of the probabilty of the gas being ignited? No, he always made little of it.
5638. And as he never spoke to you in this warning manner before the very day of his leaving, you were led to believe that he was actuated merely by vindictiveness? Yes.
5639. If he had warned you before you would have thought much more of his statement? Yes, I should.
5640. You have been clearing away the big fall in the main tunnel, Mr. White? Yes.
5641. Have you seen any signs of explosive materials having been used in any quantity to cause the damage you saw there? No.
5642. Do you believe there was any explosion of dynamite or powder there? No, I do not.
5643. Since clearing away the fall have you had greater reason to believe that the stone there might be easily disturbed by a concussion of air taking away the timber supports? Yes, the incline at this place is in proximity to the old workings.
5644. Have you any faith or belief in the dynamite theory? No.
5645. In reference to the 8th of your colliery rules, as to examining the air-courses every morning and evening, what is your opinion about that, or how do you examine the returns? I examined them by going into the entrances of the return and examining them and measuring the air at certain places. It would be impossible for me to go through the whole mine.
5646. When Crawford told you the mine was likely to blow up, that was before the new furnace was started? Yes.
5647. He never saw the new furnace? No.
5648. *Mr. Jones.*] Were the returns travelled daily in Mr. Crawford's time? Yes, more or less.
5649. Mr. Crawford told you that there would be danger of the mine being blown up if the return got fouled? Yes.
5650. Was the return travelled every day during Mr. Crawford's time, or was it merely examined as it was subsequent to his time at the colliery? The returns were carefully examined.
5651. The inference seems to be that Mr. Crawford had some doubts as to the returns becoming fouled, therefore I ask were they examined daily or not? I cannot say.
5652. Up to the time of the explosion do you know, of your own knowledge, that two men were employed clearing away the falls on both sides in the western? Yes, I am quite sure of that.
5653. *Mr. Owens.*] Do you now consider it necessary to use bratticing where gas may exist? Yes.
5654. I think you have stated that since the strike you kept a master wasteman? Yes.
5655. Who was the master wastemen? Thomas Wilson.
5656. Did Mr. Ross know that? I do not know.
5657. You gave the master wasteman instructions, I suppose? Yes, I told him never to go away from the waste on any consideration.
5658. Do you recollect whether you told Mr. Ross that? I believe I did.
5659. What length of time elapsed between the termination of the strike and the explosion? Five or six weeks.
5660. *Mr. Jones.*] Up to the time of the strike the whole of the headings and bords in the gassy district were worked with safety-lamps? Yes.
5661. What lights did you use during Mr. Crawford's time in travelling the returns? Sometimes we used open lights and sometimes Davy lamps. [*The witness withdrew.*]

Senior-Constable Henry sworn and examined:—

Senior-Constable Henry. 7 June, 1887.

5662. *Chairman.*] You are the Senior-Constable stationed at Bulli? Yes.
5663. And you are, I suppose, intimately acquainted with the people of the district and its surroundings? Yes.
5664. You were at Bulli during the strike and subsequently? Yes.
5665. Did anything ever come to your knowledge that would lead you to suppose that there was any foul play in connection with the explosion at Bulli? No; nothing whatever.
5666. Either in the shape of remarks or rumours, or anything of the kind? No. I made every inquiry and could find nothing to arouse suspicion.
5667. You made a thorough inquiry? Yes.
5668. Then any allegations of threats and foul play you found upon investigation to amount to nothing? Yes.
5669. And I suppose, from your intimate knowledge of the place and the inhabitants, and from your intercourse with the miners, if any feeling of that kind had existed it would have come to your knowledge in all probability? I am certain it would.

Senior-Constable Henry. 7 June, 1887.

5670. Have you any suspicion yourself, as a police officer, in connection with that explosion? No.
5671. *Mr. Hilton.*] You are aware, I suppose, of a statement made by the Examiner of Coal-fields, Mr. Mackenzie, as to the probability of the accident having occurred through an explosion of dynamite or gunpowder? Yes, I heard of it.
5672. Did that prompt you to make a close and searching investigation into the matter? Yes.
5673. *Mr. Clarke.*] Certain statements were submitted to you for special examination? Yes.
5674. *Mr. Hilton.*] And you made inquiry to ascertain if there was any truth in them? Yes. Of course I made inquiries as to the remarks I heard before, and I found there was no truth in them. Then I made further inquiries as to the statement of the Examiner of Coal-fields.
5675. Were you led to believe that perhaps some foul play had occurred? No, I was not. I came to a contrary conclusion. [*The witness withdrew.*]

John Caldecott sworn and examined:—

Mr. J. Caldecott. 7 June, 1887.

5676. *Chairman.*] What are you? A labourer.
5677. Have you been working at the Bulli Colliery at any time? Yes; since February last.
5678. That is since the strike? Before and after the strike.
5679. Did you commence work during the strike? Yes.
5680. How long before the strike terminated? Could not say.
5681. About how long? A month or six weeks before the end of the strike.
5682. Were any threats used towards you? Yes.
5683. Of what character were these threats? I was threatened one time whilst working outside the mine. Some of the miners on strike came up and threatened to throw me and my mate into a pond, but for some women who were looking on and who would see the act. They said but for that they would have thrown us into the pond.
5684. Who were your aggressors? They were supposed to be Union men.
5685. They did not carry their threat out? No.
5686. Were these the only threats made to you before the explosion? That was the only one used towards me.
5687. Did you ever hear any threats with reference to damaging the mine, or any statement as to what might take place in the mine? No; but I have heard of other men being threatened. I heard of men going to church and being threatened there.
5688. Did you hear the threats? No.
5689. I only want you to give your actual experience? I never heard anything beyond what I have stated.
5690. You heard no remarks before the explosion as to what might take place in the mine? No; nothing.
5691. Is there anything else you wish to say on this matter? No.
5692. Your name has been submitted as a person who could throw some light on the matter? That is all I know. I never worked inside the mine, and I was engaged outside at the time of the explosion.
5693. And you knew nothing of what was going on inside? No.
5694. *Mr. Hilton.*] Were you ever inside the mine? Yes.
5695. Have you any knowledge of underground mining? No, I have not.
5696. Were you ever employed inside the mine at any time? I have been since the explosion; not before.
5697. Can you throw any light whatever on the cause of the recent disaster? No; I cannot.
5698. *Mr. Owens.*] You stated you had been in the mine—how often? I never worked in the mine before the explosion.
5699. For what purpose did you go into the mine? I went in simply to put in a set where it came off the rails.
5700. Your usual employment was outside? Yes.
5701. And you merely went in to assist in putting the tubs on the road? Yes; that is all.
5702. *Mr. Croudace.*] Why were these threats held out to you? Simply because I came to work before the strike had finished.
5703. I suppose it was to show the spirit of animosity towards you or anybody else that worked during the strike? Yes.
5704. Did it give you the idea that you were living in a free country? No.
5705. Had you done anything to cause it? Not that I know of, except it was because I went to earn an honest and respectable livelihood.
5706. And I think it highly creditable to you.
5707. *Mr. Owens.*] Have you worked in any other mine? No.
5708. You are not a miner by occupation? No.
5709. *Mr. Hilton.*] Did you not think that the threats were of sufficient importance for you to take legal proceedings to obtain redress? Had I known the men at the time I would have done so, but we were in such dread of going down to the village that I did not think it worth my while to run any risk. We seldom went down to Bulli to see a constable for fear of being molested by a crowd of miners.
5710. This threat you speak of was held out while you were at work? Yes.
5711. Could you not recognize them? Yes.
5712. I thought you said you would have taken proceedings if you could have recognized them? Yes; if I could have got away to do so, but in going down to Bulli I would have had to get half a dozen others to keep me company.
5713. *Mr. Owens.*] What prevented you from getting away? Because I knew that others had revolver shots fired after them.
5714. You are only speaking of what occurred to others? Yes.

Thomas

Thomas Abel Jones sworn and examined:—

Mr. T. A. Jones. 7 June, 1887.

5715. *Chairman.*] What is your occupation? I am a miner.
5716. Where are you working at present? Nowhere.
5717. You worked in the Bulli Colliery? Yes.
5718. It has been suggested that you are able to give some evidence as to the cause of the explosion at Bulli;—how long did you work there? I worked there about six and a half years altogether.
5719. When did you leave off working there? In August last year.
5720. That was before the strike? Yes.
5721. Do you know when the strike commenced? Late in August I believe.
5722. What part of the mine were you employed in? I was working in the grip during the last quarter.
5723. That is three months before you left? Yes.
5724. Previous to that where did you work? Up in the "gassy."
5725. What part of it? In Nos. 6 and 7 headings.
5726. What was the state of these headings—did you ever observe any quantity of gas in them? There were slight traces in No. 6, and in No. 7 there was a quantity of gas.
5727. What was the state of the ventilation at that time? Well it was good, but occasionally it was deficient.
5728. From what cause? Well I should judge that it was on account of the doors.
5729. Through their not being properly attended to? Yes; I think so.
5730. Did this deficiency last for any time? No, for a few minutes only.
5731. Would it occur frequently during the day? Yes; sometimes.
5732. To what extent did the gas accumulate during these periods? Well, I could not say exactly.
5733. What lamps did you work with? With Davy lamps.
5734. Were any naked lamps used? Yes; they were used in about five bords.
5735. But in none of the headings? No.
5736. Did you ever make any complaint of an accumulation of gas or the deficiency of air? I had no reason to complain.
5737. You did not think it of sufficient importance or the accumulation of gas sufficiently great to cause danger? In the place I was working there was no reason to complain, but in the other places there was reason for complaint.
5738. Which headings do you refer to, and do you know this of your own knowledge? Yes, in Nos. 1, 2, 3, 4, and 7 headings.
5739. Did you visit all these headings? Yes; every heading in the gassy section.
5740. For what purpose did you visit them? Only to look in and see how the men were getting on.
5741. Casual visits, not on business? Yes; sometimes on business.
5742. For what purpose? Sometimes I would go in for powder and fuse or for anything else which I required.
5743. But you were not working there? No; I was working in No. 6 heading.
5744. And you visited others for the purpose of borrowing things? Yes.
5745. And there you observed the gas? Yes.
5746. To what extent—take No. 1 for instance? Well, I should say there would be about 4 yards in No. 1 heading from the face.
5747. How much in No. 2 heading? There would be a little more in No. 2, but the worst heading was No. 4.
5748. What was the largest accumulation that you have seen there? Well, I should think there would be 16 yards in that heading.
5749. Were there men working in the face of that heading at the time? Yes.
5750. With Davy lamps? Oh, yes.
5751. Did you ever hear any complaints made of these large accumulations of gas? Yes; I remember Noah Hobbs one day went to Mr. White, the overman, to complain about it.
5752. In your presence? No, I did not hear what he said, for he went outside.
5753. For the purpose of calling on the overman? Yes.
5754. Did he come in? No.
5755. Do you know what transpired? No, I do not.
5756. Do you know what steps were taken in consequence of the representations made by Hobbs? I did not hear what was done.
5757. You know nothing of the mine since the explosion? I was in after the accident.
5758. As a rescuer? Yes.
5759. Have you formed any theory as to the cause of the accident? Yes.
5760. Have you made sufficient observation to enable you to propound any theory as to its cause? The cause of it I think was the want of air in the back headings. That is what I think of it.
5761. But can you tell us the immediate cause of the accident? There might have been two causes, but I believe it was caused either by the firing of a shot in No. 2 heading, or the gas was blown on to a naked light.
5762. Where? In No. 2 heading.
5763. Either one of these two causes? Yes. The gas was either fired by the shot, or blown on to a naked light.
5764. How would it be blown to a naked light? By the shot.
5765. Where, in your opinion, was the naked light? Hanging just outside the danger-board.
5766. Then you think it might be accounted to the shot or this naked light? Yes.
5767. That is your theory? Yes.
5768. Do you think there was only one, or two separate explosions? I think it is possible that there were two.
5769. Where would the second be? Between the western and the gassy sections.
5770. Where? There is a heading off the straight that runs into the western, and I think there is a vacant place where the gas could have lodged, and that after the gas fired in No. 2 it might have reached the other accumulation, which helped to carry the blast into the western.
5771. Have you seen any indications of a second explosion having taken place? I examined the positions of the skips and other things that were blown that way. 5772.

Mr. T. A. Jones. 7 June, 1887.

5772. Is it impossible for these indications to have been caused by one explosion, or must there have been a second? They may have been caused by one, but I am inclined to believe that the blast was helped by the other. That is my opinion.
5773. You say it might have been caused by one explosion, but in your opinion it was assisted by a second? Yes.
5774. Did you know of any accumulation of gas in that particular spot before, or did you ever hear of it? Yes; I heard that when they were driving an air-course over the roll or fault that gas was found there.
5775. Was that at the dyke? Yes; on the left of the gassy section.
5776. How long was that ago? It is a year and a half or two years since that occurred.
5777. Do you know whether that accumulation was displaced afterwards by the air-courses? No, I do not know of it.
5778. It was soon after opening up the gassy section that it was found? Yes, at the beginning.
5779. The air-courses were not built at that time? It was in operation.
5780. Is there anything else that you would wish to say to the Commission with regard to the state of the mine before or after the accident—if so, we will be glad to hear it? I only wish to say that I am sure that the accident could not have happened if the air had been taken up to the back headings.
5781. Do you mean if bratticing had been used? Yes; I am confident that the explosion would not have occurred if it had.
5782. You believe, then, that in the presence of gas bratticing should be used in old headings? Yes, of course.
5783. Is there any other recommendation which you wish to submit for the proper working of the mine? I consider that every mine ought to be properly ventilated. The Bulli mine is not, and never has been, that I know of.
5784. Do you know whether the ventilation has been improved since the strike, or since you worked there. Yes, I believe it has been improved of late.
5785. Do you know to what extent? I think there have been a few hundred feet of extra air.
5786. It has been stated that the ventilation has been improved threefold? I have no doubt that it has been considerably improved.
5787. You have no reason to disbelieve that? No; but it is no use improving the ventilation if the air is not taken into the right places. I think if double doors had been used in these headings it would have kept up the ventilation continually; but it has been greatly hindered at times by the single doors.
5788. Is there any other recommendation? I may remark that I have mentioned to the deputies when I was going through the doors that they ought to have been doubled, and I recollect mentioning it to Crawford.
5789. What did he say? He did not say anything.
5790. Did you mention it to anybody else? Yes, to Harris and Robbins, two other deputies.
5791. Have you any idea whether they submitted your recommendation to any higher authority? I do not know.
5792. They were not followed by any result at any rate? No.
5793. Is there anything else that you would like to say? Yes; there is one thing. On the day of the election, when we elected Mr. Woodward, I had a conversation with Mr. White, the overman, and asked him whether he thought there would be any gas when he opened up the gassy section again. That was during the strike, and he said that he did not think there would be any gas at all in the Hill End section.
5794. Did he say why? We said it would all be drained away, and I said to him, "You will find yourself mistaken." I have been in several gassy coal pits in England, and I know the results of gas.
5795. Did you say anything more to him on that occasion? No.
5796. Did you not make any suggestion to him? No, because I was under the impression that he understood everything in connection with coal-mining, and I thought he knew as much as I did.
5797. *Mr. Neilson.*] Where is this No. 7 heading? It is the last heading in the section on the left.
5798. Going into the western? Oh, no.
5799. Is it on the left-hand of the straight run? Yes.
5800. *Mr. Hilton.*] Did you hear anything after the termination of the strike of the dangerous state of the mine on account of gas? Do you mean immediately after the strike?
5801. Yes. When the men resumed work after the strike, did you ever hear anything between that time and the explosion about the dangerous state of the mine? I did hear that there was still a quantity of gas in the headings. That is all I heard.
5802. *Mr. Owens.*] You stated, Mr. Jones, that you had seen gas in No. 6 and 7 headings? I said in No. 7 heading.
5803. I thought you said very slight traces in No. 6 and a quantity in No. 7? Yes, that is right.
5804. Did you report that to any of the officials at the mine? No, it was an understood thing.
5805. What was your reason for not reporting this gas? Because I knew that the officials knew of it, or I would have done so.
5806. How do you know? Because I have heard them warn men about it, and I have heard them tell the men to hang their lamps low on account of the gas.
5807. You stated that you were in the mine as a rescuer after the explosion? Yes.
5808. During that time were you in No. 2 heading? No, I was not in the heading; I only went up to the entrance of No. 1.
5809. Did you work in any of these bords off Nos. 1 and 2? I opened up the air-course off No. 7 heading.
5810. I mean in Nos. 1 and 2 headings or in any of the bords off them? No, I never worked in any of them.
5811. You say that you found gas in No. 7 heading, and that you did not report it to the officers? No, I did not report it.
5812. You stated further that you were perfectly sure that if bratticing had been used, the accident would not have occurred? Yes; in my opinion it would not.
5813. By that you mean to imply that you believe in bratticing? Yes.
5814. And that bratticing should have been used in these two headings? Yes. 5815.

Mr. T. A. Jones. 7 June, 1887.

5815. *Mr. Jones.*] You stated that previous to the strike the doors were not attended to. Do you mean to imply that there were not trapper boys there? Yes, trappers were kept at the doors; but the hindrance would occur in this way: A set might get off the road, or an axle might break, and if this occurred at the door it would have to be kept open until the set was got away, and during all this time the air would be going in a wrong direction.
5816. For that reason you suggest that the doors should have been double? Yes.
5817. You further stated that in some portions of the gassy district bords were worked with naked lights? Yes.
5818. What bords were these? There were three bords off No. 1, I believe, and two in No. 7 heading.
5819. We have it in evidence that the whole of these places were working with safety-lamps previous to the strike? It is untrue.
5820. Do you make that statement of your own knowledge? Yes.
5821. What was the course of procedure with reference to the locking of lamps during Crawford's time, prior to the strike? I don't believe they were locked until Wales and Woods were sent out of No. 7 heading for working with the gauze of their lamps off.
5822. Can you say that the lamps were not locked at that time? You must understand that I can only speak from my own experience.
5823. If you were told that the whole of the lamps were locked previous to the strike would that be untrue? Yes.
5824. You stated that the air was sometimes deficient previous to the strike? Yes.
5825. Can you assign any special reason for that? Only the opening of the doors; that is the only reason I can give.
5826. Did you ever hear amongst the workmen or officials that the way in which the wind blew operated upon the furnace, and thereby brought about a depression in the air? I never heard of it, but it might be true.
5827. You stated that you believe a second explosion took place. Do you make that statement in the belief that gas was known to exist in a heading off the straight road? I do not understand.
5827½. You said that you worked in Nos. 6 and 7 off the straight, and that gas was known to exist there. Is that your reason for saying that a second explosion took place? I believe that gas got out into the place I referred to.
5828. But in the light of the ventilation having been improved threefold, do you still believe that gas existed there, and was ignited in the way you described? Yes, I believe so; for instance, if the furnace was idle, the gas would get up there.
5829. Have you any reason to suppose that the furnace was idle at the time of the explosion? I could not say whether it was idle or not.
5830. But, assuming that it was working as you say, and that you were told that something like 12,000 cubic feet of air was going over the Hill End district, that being the case do you still think that gas could have lodged in Nos. 6 and 7 headings, and that it operated as a second explosion? I believe a little of it would get out there, in consequence of the way in which the air-course was constructed. There was a big opening there; but if there had been a proper air-course gas could not have accumulated.
5831. Was not the return almost parallel with the intake, and were not the workings off Nos. 6 and 7 headings very limited? Yes.
5832. And there would be very little room for gas to lodge there? Yes, there would be very little.
5833. *Mr. Croudace.*] Had you a copy of the rules given you at any time during your employment at Bulli? I never had any rules.
5834. You never had? Never.
5835. Do you know whether there was any rule prohibiting men from going from one place to another in the pit? No, I did not.
5836. Do you know whether it is customary to allow men to travel about in fiery mines? I never heard anything to the contrary.
5837. Have you ever worked in fiery mines in England? Yes.
5838. Where? In Derbyshire and Staffordshire.
5839. Were you allowed to travel from one place to another in those mines? Yes; I never had any hindrance; we could go about them any way we chose.
5840. How long is it since you worked there? About eight years ago.
5841. Well there is a rule preventing it in the Bulli mine. No. 4 of the special rules says:—"No workman or boy shall, unless duly authorized to, go into any part of the mine excepting that to which he is appointed by the overman or other officers." You, by travelling about this fiery mine, have been breaking one of these rules? Well, if so, I was in ignorance of it.
5842. You stated that the Bulli mine, during your time, was not properly ventilated; in what way do you mean? Well all the air-courses were not properly built up in the headings; they were not properly constructed.
5843. Then you said that the system of ventilating by means of doors was imperfect? Yes. I have recommended that the doors should have been doubled.
5844. And with the exception of bratticing have you any other fault to find? The ventilation of the mine was not sufficient at the time I was working there.
5845. You say that this would have been remedied if bratticing had been used, and the doors had been doubled? Yes.
5846. Was there any other deficiency in the system of splitting the air and anything else? Yes. The ventilation could have been improved in different ways, and the Act specifies, I believe, that every seventy men shall have a separate split.
5847. Were there any more than seventy men in any part of the Bulli mine? Yes, I believe so.
5848. Are you perfectly sure; can you tell me in which districts there were more than seventy men? I am positive that there were more than that number.
5849. In which district? In the Hill End district and in the western.
5850. Were they supplied by one system of ventilation? Yes.
5851. No split in the ventilation? No, there was not.
5852. Are you quite sure of it? If there was I was ignorant of it.

Mr. T. A. Jones. 7 June, 1887.

5853. Were there not a distinct travelling road, a distinct airway, and a distinct overcast over the western district? I cannot say that there were.
5854. Have you any knowledge of what you are saying; have you ever travelled that way? I have travelled from the "gassy" into the western, and from the western into the grip.
5855. Was that in one continuous airway, as far as the doors and the overcast were concerned? Yes, previous to the strike.
5856. And I am speaking previous to the strike; the air went round No. 1 return up the back heading, passed Nos. 6 and 7 heading, went away to the western, then to the grip, and thence to the furnace;—is that the route? I think there was some alteration some two or three years ago.
5857. I am referring to the time just previous to the strike; did the ventilation go round Nos. 1, 2, 3, 4, 5, 6, and 7 headings, thence to the western, then into the grip in one undivided course? Yes, I believe it did.
5858. Since the strike have you any knowledge as to its course? No, I have not.
5859. If I were to tell you that Nos. 1, 2, 3, 4, 5, and 6 in the Hill End district had, in fact, a distinct split, a distinct return air-course, and an overcast to the furnace, and that the western had a regulating door to give it a distinct split in the ventilation, would you consider that an improvement? Oh, yes, if that were so.
5860. Well that is sworn to be the case by several witnesses? If so it would be a great improvement on the system that existed when I was working there.
5861. Did I understand you to say that, after the explosion, you only went along the main road as far as the entrance to No. 1 heading? Yes.
5862. Then all your statement about a second explosion is not from observation or from the effects you witnessed after the explosion, but merely supposition; you did not examine the headings on the return air-course? No.
5863. Have you anything to substantiate your theory, or is it merely supposition? I had not an opportunity of making a complete examination.
5864. I am speaking of what you did; am I right in saying you only went to the entrance of No. 1 heading? Yes.
5865. And you think that a second explosion took place in the big heading going to the western? Yes.
5866. Were you in there at all? No.
5867. Then it is only supposition on your part; you have seen no effects on which to base your theory? No, I have not.
5868. You have already answered, but I want you to be very careful in answering it again; you said that, prior to the strike, you for some time worked with an unlocked lamp;—is that really the case? Yes.
5869. You make that statement without hesitation? I have none.
5870. It was only after two men were sent out of the mine for working with the gauze off their lamps that your lamp was locked? Yes.
5871. You are quite sure? Yes, I am quite sure.
5872. If Mr. Crawford, the former deputy, swore before the Commissioners that the lamps were all locked previous to the strike, and that, in fact, he locked them himself, is that true? So far as my lamp was concerned it was not.
5873. I am referring to your own knowledge? Well it was not so.
5874. And we cannot believe his testimony as far as you are concerned? No.
5875. You also made some remark that, providing the furnace was idle at any time, gas would accumulate in a certain part of the mine;—can you describe to me that position? I think it was No. 7 heading that you speak of. I will give you a rough sketch by which, I think, you will be able to point out where you mean. I think there is a probability of gas having accumulated in this heading (No. 7), which would be very liable to increase in quantity if the furnace was allowed to remain idle any length of time, and if there was a large accumulation there it might have been the cause of a second explosion.
5876. *Mr. Neilson.*] Can you tell me where the danger signals were fixed in the gassy district immediately you got through the dyke; you say there were several bords working with naked lights? The danger-board was fixed at the entrance of No. 1 heading.
5877. Was there not one fixed at the entrance of No. 2 heading? At that time there was only one danger-board, which acted for both headings.
5878. Was there any danger signal between the bords working with naked lights and those working with safety-lamps? Yes, there were bords off Nos. 1 and 7 headings working with naked lights.
5879. *Mr. Hilton.*] Did you work in the western district before the strike? Yes.
5880. Was there a door between the Hill End and the main western road fixed at the junction? Yes; there was a door in the junction.
5881. Was it an ordinary door? Yes, it was an ordinary door.
5882. When you entered the tunnel mouth you left the grip road on the left-hand side and went up the Hill End district, before getting there you came to the western road and found a door at the western junction. Did you notice whether there was any hole through that door, to admit air into the western district? No; I did not notice it.
5883. Then the air would have to go up the Hill End district, around by the return into the western, and from the western down into the grip, and then to the furnace? Yes; that was its course.
5884. And that leads you to make the statement that it was a continuous system of ventilation? Yes.
5885. Was the 4-foot seam working in your time? Yes, it was.
5886. *Mr. Owens.*] Do you know anything of the furnace? Yes.
5887. You say that you have been in since the explosion? Yes; but only as an explorer. I went up to the furnace the first thing.
5888. That was the first time that you saw the new furnace? Yes.
5889. It was not there there before the strike? No.
5890. *Mr. Neilson.*] Do you understand the route of the air-course? Yes.
5891. If there was an air-crossing in the western, over the main road, would that air be utilized by the men in the Hill End district? There was no crossing there before the strike.
5892. *Mr. Hilton.*] Who was the deputy in the western district previous to the strike? Harris was the deputy.

5893.

Mr. T. A. Jones. 7 June, 1887.

5893. Did Harris ever, within your knowledge, request that the western door should be opened to admit air to men working in the western district? I never heard anything of that kind, so I cannot say whether he did or not.

The Commission then adjourned *sine die*.

MONDAY, 27 *JUNE*, 1887.

Present:—

DR. ROBERTSON, PRESIDENT.

MR. O'MALLEY CLARKE, MR. CROUDACE, | MR. OWENS, MR. JONES,

MR. HILTON.

Eward Kerrison sworn and examined:—

Mr. E. Kerrison. 27 June, 1887.

5894. *President.*] What is your occupation? I am a miner.
5895. Where are you at present working? At Maryville colliery, Newcastle.
5896. Before that were you working at Bulli? Yes.
5897. Were you engaged there on the date of the explosion at that Colliery? Yes.
5898. When did you go from the mine—at what o'clock? I left the mine at 20 minutes past 1 o'clock on the day of the explosion.
5899. What was the reason of your leaving your work so soon? I met with an accident and got a cut on the head.
5900. Where were you working? We were for some time working in the western district.
5901. Were you working at the coal? Yes.
5902. What kind of an accident was it you met with? In pulling down a piece of coal I knocked out a prop, which struck me on the head.
5903. That was the cause of your leaving the mine? ——
5904. In going out of the mine what road did you strike? The Hill End incline.
5905. In coming down did you meet with anything unusual? No; I met Mr. Wade.
5906. Who is he? He was looking after the rails and that. It was near the tunnel mouth.
5907. How far in the tunnel was it? About 50 yards.
5908. Did you pay any particular attention to the state of the incline in going down? Not particularly. I did not feel very well after getting the knock.
5909. You met no one except Mr. Wade? No.
5910. And you saw nothing unusual in the appearance of the incline? No.
5911. Had you been working at Bulli for some length of time? For seventeen years.
5912. Were you working in the gassy section? No, sir; I did not work much in the gassy section, since the gas was found.
5913. Not for about two years? About two years and six months, or three years.
5914. Was Wade one of those who were lost in the mine? Yes.
5915. Do you know where he was found? From what I hear I think his body was found near the top of the incline.
5916. Had you any conversation with him when you met him, on the occasion you speak of? I told him about being cut on the head, and he said I ought to be careful, and things like that.
5917. And you saw nothing unusual in the state of the mine on your leaving? No; things were about the same as usual in the intake.
5918. You saw nothing unusual in the state of the incline? No.
5919. Do you know anything about the accident—did you enter the mine after the accident? Yes; I was on the Friday.
5920. Where did you go on the Friday? The first thing in the morning I went down to the gassy section to search. I went in on purpose to go to the western district, as I was of opinion that some men would be found alive there.
5921. Did you go into the western? I did in the evening.
5922. Had the men been taken out then? No; Mr. McCabe and others were going in.
5923. *Mr. Hilton.*] What part of the mine were you in on the day of the explosion? I was in the furthest in bord in the western. Previous to that I was working in the return air-course going into the furnace.
5924. Not having worked in the gassy section then you have nothing to say about it? No.
5925. Do you know any of the men that were working in the gassy section? I know one or two of them.
5926. Did you ever hear anything about gas existing there? Yes; Noah Hobbs told me there would be a blow-up. He was working there previous to the strike.
5927. Have you heard anything about the gas since the strike? No, I have not.
5928. You know nothing yourself? No, not from my own knowledge.
5929. *Mr. Croudace.*] When you heard Noah Hobbs say there would be a blow-up did you recommend him to tell the manager or the overseer of the mine? I did not reckon it to be my place, as he knew more about it than I did, because he had been working in it all his lifetime.
5930. You did nothing yourself towards informing the management of what Hobbs had said to you? No; it would not be my business, as I was not working in the gassy.
5931. You were working in the same mine? Yes; but a good distance away from there.
5932. Do you not think that, as a miner of old standing, it was your duty to make the officials acquainted with the circumstance? I thought they would know more about it than I did.
5933. Supposing you had no experience of gas at all, and you heard a man say there was gas, and that there would be blow-up, do you not think it would be your duty to tell about it? Under these circumstances it would perhaps.
5934. Those were the circumstances, and why did you not do it? Well, Mr. White and Mr. Ross knew it, and I did not see why they wanted telling.
5935. *Mr. Owens.*] When was it you heard Hobbs making this observation;—was it before or after the strike? Before the strike, when he was working there.

5936.

Mr E. Kerrison. 27 June, 1887.

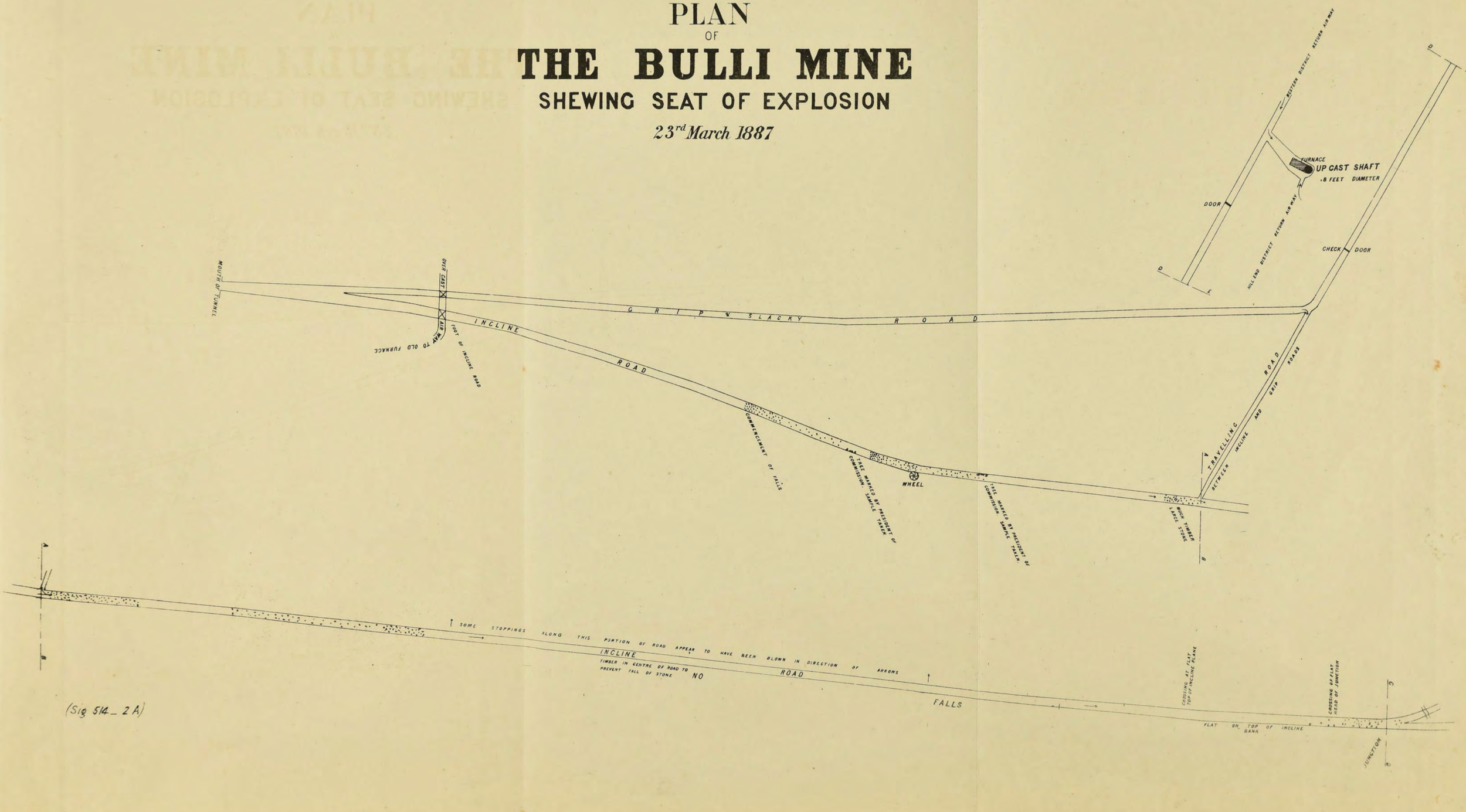
5936. *Mr. Jones.*] Who engaged you, Mr. Kerrison? Mr. Ross.
5937. Did he make any remarks to you or mention anything about the existence of gas in the mine? No.
5938. Did he ever tell you to be careful or cautious? No; I did not work in the gassy section.
5939. Did you receive a copy of the rules? Yes.
5940. On coming out of the mine on the day of the explosion you came down the incline you say? Yes.
5941. Was there any other way out? No.
5942. You are quite sure? Yes; there was no other way. The only other road was to be the one we were driving through to the new furnace for air.
5943. On the day of the explosion did you notice any material difference in the air current? Not the slightest.,
5944. You think the ventilation was as good as usual? It was about the same.
5945. You have said that Hobbs and others spoke of a probable explosion before the strike? Yes.
5946. Did you hear any similar remarks after the strike? Not to my knowledge. He often told me that the men were too careless.
5947. That was before the strike? Yes.
5948. Was there a considerable improvement in the air after the strike? No; I think it was the other way about. There was no proper return to the western, that was why we were driving there.
5949. Do you not think that since the new furnace came into operation there was an improvement in the ventilation? The air was a little better where I was working; but I reckon the reason was there were not so many men working there; there were only eight men working where there used to be forty.
5950. Do you mean to say there was no improvement after the new furnace started? I say the air was better; but I think the reason was that there were not so many men and horses to be supplied.
5951. Do you think the improvement in the air satisfied the men that there was less danger to be expected from an explosion? Where I worked we never had any thought of an explosion, and I cannot say anything about the other part.
5952. Did it never occur to you that an explosion in the Hill End district would affect the men in the western? No; that was the last thing to enter my head.
5953. *Mr. Owens.*] During your seventeen years' experience in the Bulli mine did you ever see any firedamp or gas in any part of it? No.
5954. You never saw it yourself? No.
5955. You only heard of its existence? That is all.
5956. *Mr. Jones.*] So far as you are aware you never heard the men complain of the existence of gas after the strike being a source of danger—it was only before the strike? Yes, before the strike.
5957. You did not even hear about it afterwards? Not that I recollect; I never had much to say to any of them.
5958. Did you never hear of any unusual quantity being found, such as blowers, for instance? I heard of a blower in Westwood's heading.
5959. You did not take the trouble to go and see it? No.
5960. You did not think it was a source of danger? By our rules I did not think I should be right in going there.
5961. *Mr. Owens.*] Is or was there any rule that would prevent you reporting danger if you saw or heard of it? I can hardly think that.
5962. You did not regard the rules as preventing you reporting the existence of danger? I know that if I had seen any danger I would have reported it.
5963. *Mr. Hilton.*] You say you got a copy of the rules, was it a copy like this [*holding up a small book of rules*]? Yes; it is about seven years since I got those rules. [*The witness withdrew.*]

This concluded the evidence.

APPENDICES.

[Appendices Nos. 1 to 5 comprise Plans.]

PLAN
OF
THE BULLI MINE
SHEWING SEAT OF EXPLOSION
23rd March 1887



(Sig 514_2A)

APPENDIX No. 2

PLAN

SHEWING

THE POSITIONS &c. OF COAL LAND HELD BY COMPANIES

IN THE

ILLAWARRA DISTRICT

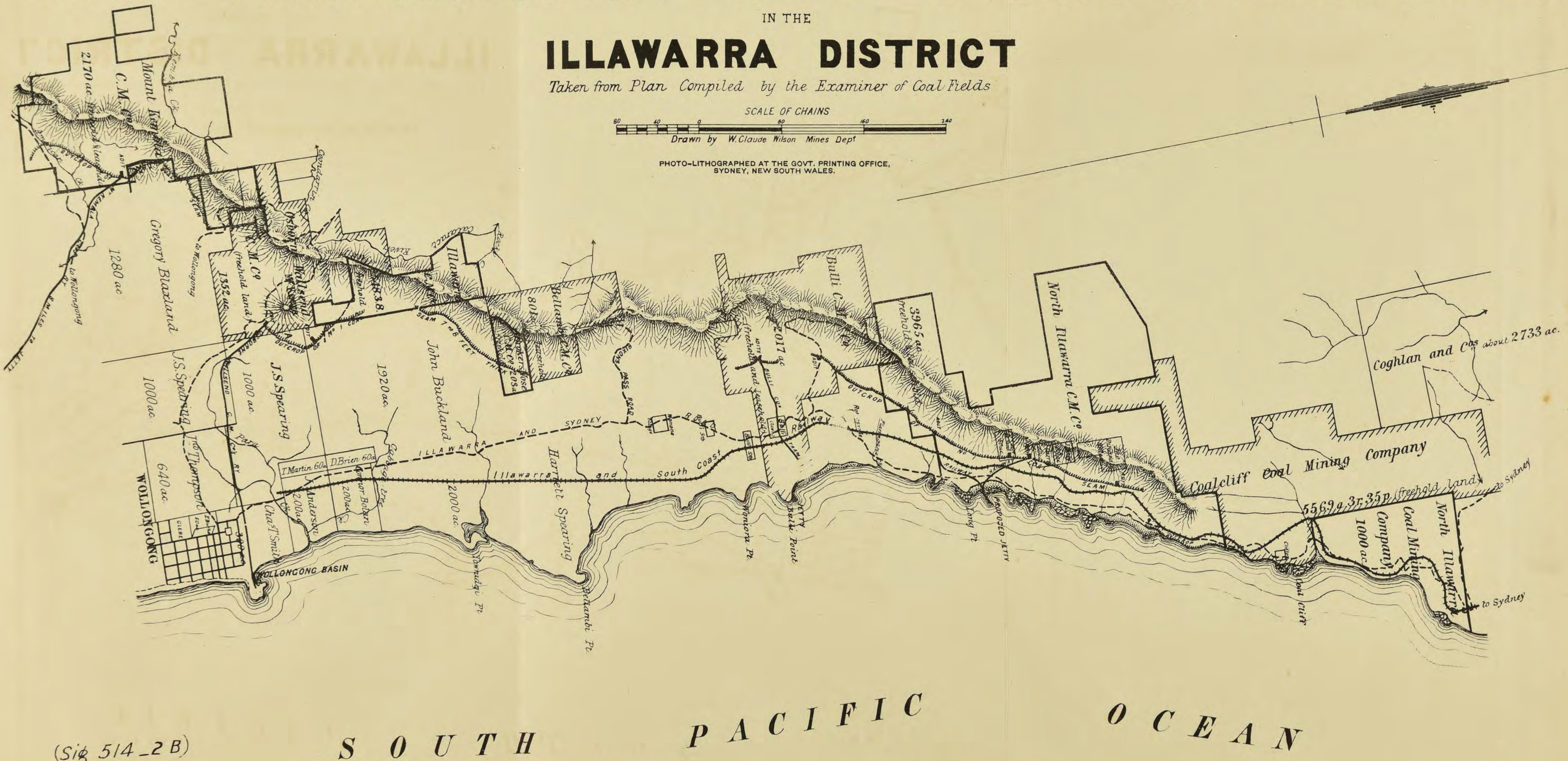
Taken from Plan Compiled by the Examiner of Coal Fields

SCALE OF CHAINS

80 40 0 80 160 240

Drawn by W. Claude Wilson Mines Dept.

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.



(Sig 514_2 B)

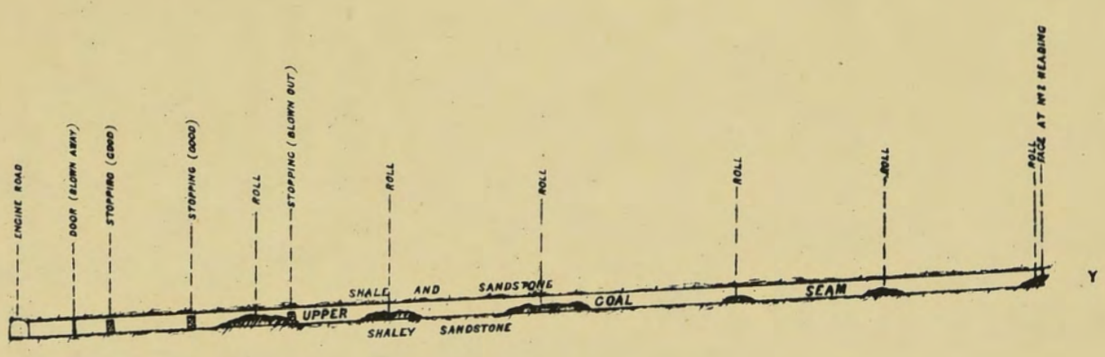
HORIZONTAL SKETCH SECTION

ALONG LINE XY Nº 2 HEADING, PLAN Nº 5.

SCALE.

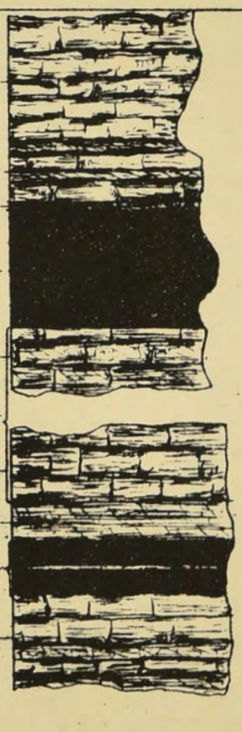
FEET 66 44 22 0 66 132 FEET

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.



SECTION OF COAL SEAMS

ft	ins.	Strata
		SANDSTONE
4	6	SHALE AND SANDSTONE
	6	BLACK SHALE
3	0	UPPER COAL
		SHALEY SANDSTONE
35	0	
		SANDSTONE
		SHALE
3	11	FOUR FOOT COAL
		SANDSTONE AND SHALE



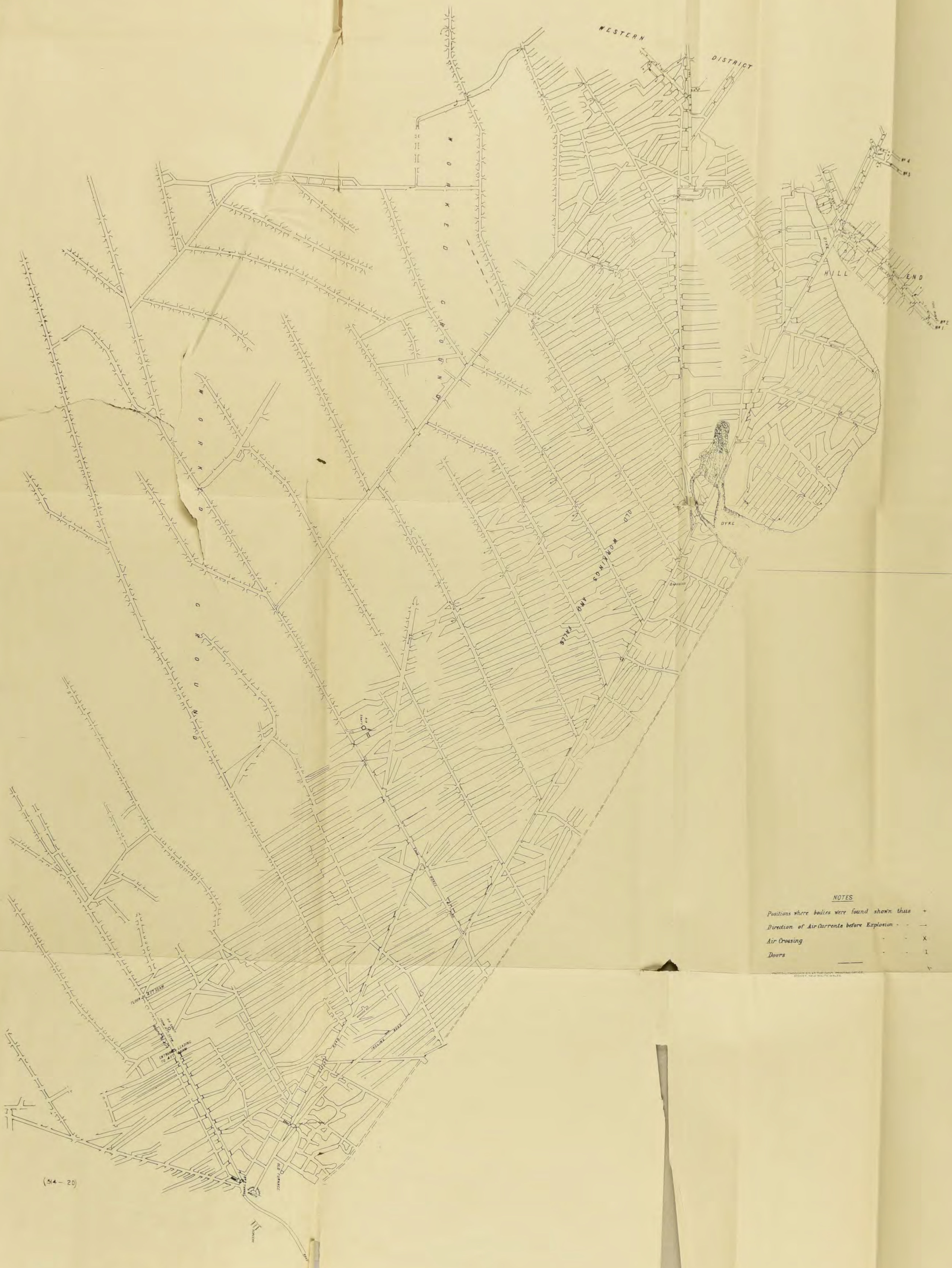
(514—20)

PLAN

SHEWING

THE WORKINGS OF THE BULLI MINE

APPENDIX Nº 4



NOTES

Positions where bodies were found shown thus +

Direction of Air Currents before Explosion - - —

Air Crossing - - X

Doors - - I

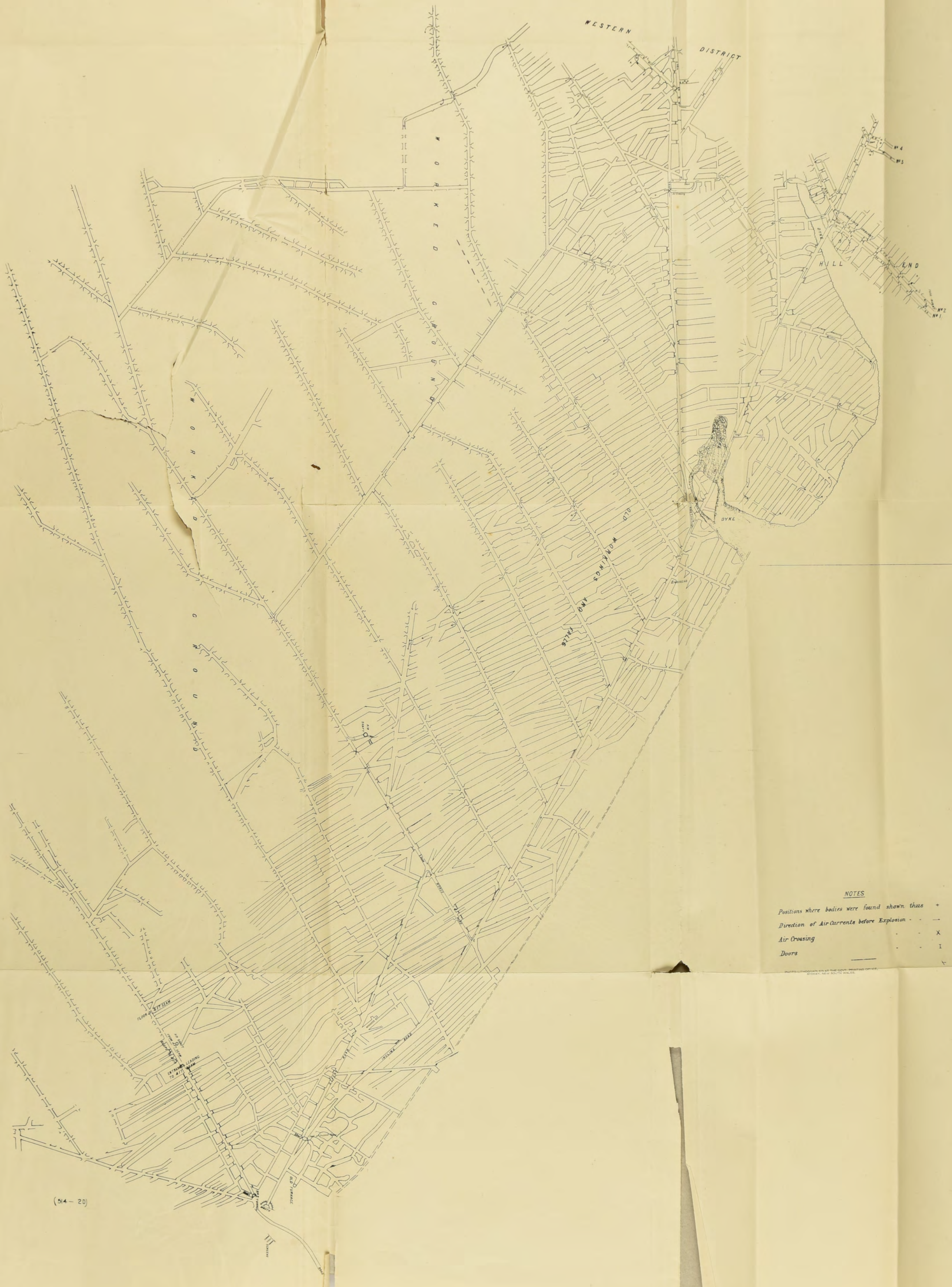
(514 – 20)

APPENDIX N° 4.

PLAN

SHEWING

THE WORKINGS OF THE BULLI MINE



NOTES

Positions where bodies were found shown thus +

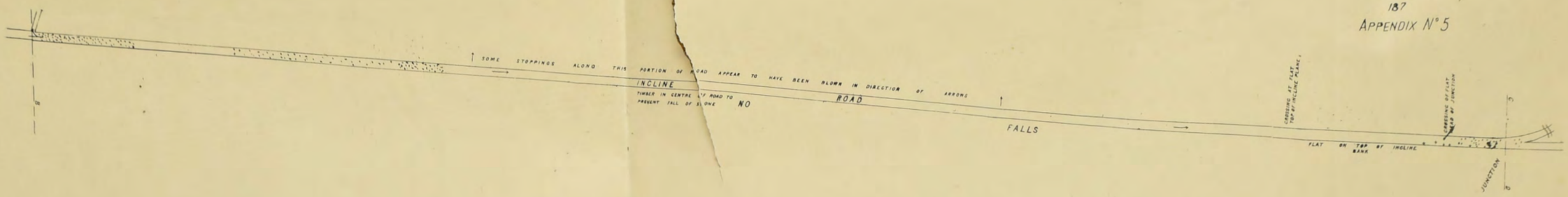
Direction of Air Currents before Explosion - - —

Air Crossing . - X

Doors . - I

(514 – 20)

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.



NOTE Positions where bodies were found shewn thus +

Falls ⁘

Directions of Air-Currents before Explosion ——→

Air Crossing X

Doors ‖

Rolls on floor of Coal Seams

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

SCALE

FEET 66 44 22 0 66 132 198 264 330 396 462 FEET

(Sig. 514-2E)

Thomas Ann Robertson
President

APPENDIX No. 6.

Inspector Rowan's Reports in reference to the Bulli Colliery :—

Sir, Wollongong, 2 September, 1886.

For your information, I have the honor to inform you that I have inspected the Bulli Colliery on August 5th and 9th instant :—

Bulli old Tunnel.—About 130 men and horses are employed, and served with 12,500 cubic feet of air per minute in three different splits.

Hill End district.—Thirty-six men and horses employed, and supplied with 3,600 cubic feet of air per minute. The miners in this division are working with safety-lamps, as the coal gives off a small portion of fire-damp. Strict discipline is exercised by the management to ensure safety, viz., the bords are examined every morning by a competent person, and the same reported to be safe before the miners commence work. Four danger signals are placed at a respectable distance from the working faces, cautioning persons not to pass said boundaries with a naked light. I carefully examined every bord with a safety-lamp, but in no case did the fire explode in the lamp. I also asked the miners if they considered every care was taken ; they said they believed so, and that the deputy made several inspections during the day.

Hill End, West.—About forty-six men and horses employed, and served with 5,500 cubic feet of air per minute.

Slacky heading.—About thirty men and horses employed, and served with about 3,400 cubic feet of air per minute. I went through a large portion of the waste workings, which from the return air-course, for the Hill End district, heavy falls of roof have taken place. I pointed out the defective condition of this return air-way. The manager showed me a new return air-way he was making through a portion of the waste workings and solid coal ; which is expected to be finished in a few weeks, as he was driving it from each side, with two shifts of men. This air-course will come along all the working faces, and will be the future permanent air-course for the colliery.

I have, &c.,
JAMES ROWAN,
Inspector of Collieries.

The Examiner of Coal-fields.

Sir, Wollongong, 25 October, 1886.

For your information, I herewith forward report of my inspection made at Bulli Colliery on the 20th instant.

On making my inspection of the workings I found that heavy falls of roof had taken place in the return air-ways, also in Harris's heading. In this heading, where about forty men were employed, the manager has lifted all the plant, as there was no possible way of keeping the roads in order.

This, Harris's heading has a very bad class of roof, and requires a constant staff of way-men to keep it in order. The manager informed me at the commencement all the day-men and deputies struck work with the miners, leaving him without a man ; even the underground furnace man left, and it was with difficulty he could find another to fill his place. I mentioned in my last report that a new air-couse was in course of construction, which by this time would have been finished, but that also was at a standstill for want of workmen.

The new furnace which is being built about 43 chains from the entrance of the tunnel is almost finished, which will be a great boon for the ventilation of the colliery.

I have, &c.,
JAMES ROWAN,
Inspector of Collieries.

The Examiner of Coal-fields.

Sir, Wollongong, 22 December, 1886.

I beg to state that I have inspected Bulli Colliery on the 20th instant.

The miners are still on strike. Five men employed underground doing general repairs. I examined the Hill End division of workings. This is the division of workings that used to generate fire-damp, and where the men when working had locked safety-lamps. I examined this portion with a safety-lamp, and found the same clear from fire-damp or any other foul gases. I could not pass through the other two divisions of workings on account of heavy falls of roof, especially in the return air-ways. I drew Mr. Ross, the manager's attention to the condition of the return air-ways. He stated he could not get men to work to keep the air-ways in order, and they were constantly falling. (See October report on the Bulli Colliery.) But it would be his first business to put the air-ways in order, when the strike was settled. The new ventilating furnace is now finished, and in working order.

I have, &c.,
JAMES ROWAN,
Inspector of Collieries.

The Examiner of Coal-fields.

Sir, Wollongong, 2 March, 1887.

For your information, I have the honor to inform you that I inspected Bulli Colliery on the 17th instant.

Hill End District :—Fifty men employed, four of them working in narrow headings with safety-lamps, owing to the coal giving off a small per cent. of fire-damp. I carefully examined this division of workings and found the ventilation good in every bord, 12,000 cubic feet of air being brought up to within 20 yards of the furthest in working face. On examining the return air-way I found that heavy falls of roof had taken place. The falls were so heavy I could not make a passage through. I drew the manager's attention to this matter. He stated that he had three shifts of men working, making a new air-course, and the same would be kept working until a proper recognized air-way was made from the working faces to the ventilating furnace. As I have formerly reported, a number of these falls took place during the recent strike.

Harris's heading, where forty men were employed previous to the strike, is so completely crushed, caused by the bottoms heaving, in this district. The boards will require to be cut out anew with a pair of headings.

I have, &c.,
JAMES ROWAN,
Inspector of Collieries.

The Examiner of Coal-fields.

APPENDIX No. 7.

Dr. Llewellyn's Evidence.

James Davis Llewellyn sworn :—

The Coroner.] What are you? I am a duly qualified medical practitioner, registered in this Colony, practising in this district, and residing at Wollongong.

Do you remember the 23rd inst. ? Yes. On that day I went to the Bulli colliery, arriving there, from Wollongong, at about 10 o'clock on the night of the explosion. About 12 o'clock that night the body of a young man was brought out. I made an examination of the body, so as to discover the cause of death. The man was covered with coal-dust, and on the top of his head was a penetrating wound leading down to the skull cap. There were thin layers of skin well blackened with coal-dust, but not charred, detached from the palms of both hands. After his face was washed, both cheeks, both lips,—and upon feeling the skin further off—the palms of the hands were also florid. The elasticity of the detached portions of the skin from the palms of the hands was unimpaired. He had the appearance of a man who had died from carbonic oxide poisoning. The florid colour of the face and other parts was due to a chemical combination which carbonic oxide forms with the colouring matter of the blood. It possesses the chemical property of displacing oxygen from the blood. The hair on the head was short.

Were there any signs of singeing? I could not say that. The hair was short and covered with coal-dust, but there was no evidence of the slightest burning on any part of the body; no vesication. I saw No. 2 body, said to be the father of the young man who was first brought out. He was very much injured. The left leg, at the junction of the lower forepart, was fractured, both bones being fractured also. The lower fragments of the limb were tilted outwards, so as to form about a right-angle with the long axis of the limb. Upon coming up the side of the body both bones of the corresponding forearm were fractured near the wrist. There was also a deep cut close to the wrist. The lower jaw on the left side was also fractured. There was hemorrhage within the interior chamber of the left eye, and on the head were several cuts, some down to the bone, and some going past and penetrating the soft tissues. The palms of the hands presented the same appearance as No. 1 body, with this exception that when peeling off the skin the pallid surface was exposed to view. This man must have died from the sudden shock before he had time to be poisoned. The hair on this man's head was also short, but there was distinct hair on the head. I saw several other bodies brought out, but I did not take particular notice of the cause of death, as with the first two. I took notice of the external marks of violence, and that the skin peeled off. I saw five or six bodies altogether. I thought at first that the appearances of the palms of the hands were due to burning, but I found that I had made a mistake. When the skin is burned it does not detach. It is due to friction or pressure. In burning, the skin always remains a fixture. The six degrees of burning, according to Charcot, the great French surgeon, are—

First.—Redness and tenderness of the surface; after a few hours these symptoms may subside, the cuticle possibly desquamating. *Second.*—Inflammation is the result. This action is manifested by the formation of blisters from the effusion of serum beneath the cuticle. *Third.*—The superficial layer of the true skin is destroyed, the surface appearing of a gray-yellowish or brown colour; not painful unless roughly handled. The vesicles that exist contain a blood-stained or brown fluid. The papilla of the skin with its nerves are first destroyed; but when in the course of a day or so the dead surface has been "shed," and the nerves exposed, the pain is very severe, and the exposed surface has a reticulated appearance. *Fourth.*—The whole thickness of skin is destroyed, with more or less of the subcutaneous cellular tissue, the parts being converted into a hard, tough, dry, and insensible eschar, mottled with blood. Vesication does not exist in this degree, all the superficial tissues having been destroyed. The skin surrounding the eschar may be blistered, but when it comes in contact with the injured part it will be drawn into folds, from the contraction owing to the drying of the burnt integument. This puckering fairly indicates the important fact that the whole skin has been destroyed. The eschar does not begin to separate for four or five days, an inflammatory zone of redness, with pain of some severity, indicating the commencement of a process that will not be completed for two or three weeks. *Fifth.*—The skin with the deeper parts are involved, a black brittle charred mass taking the place of healthy tissues. *Sixth.*—The whole thickness of a limb is carbonised.

I never saw anything indicating the burning of the skin beyond the first degree of burning which is shown by redness alone. All I saw was the redness, and its cause I have already explained—namely, carbonic oxide poisoning. No. 2 body died instantaneously. He died before No. 1. I can give you the cause of the deaths of these two men, and from these causes I suppose the others died as well. I am satisfied of the causes of death only in two cases, but seeing that the men were all together it is reasonable to suppose that they all died in a similar manner.

Do you remember who identified the first body? No; there was someone in the room who recognized the body as that of Felix Bourne. An old woman named Mrs. Jones recognized both bodies.

Do I understand that Felix Bourne died from the effects of after-damp? After-damp usually contains carbonic acid, and in these two cases there were appearances of this cause of death.

In the case of death by asphyxia, from after-damp, how long does life continue? You must take two features into consideration. If you have pure carbonic acid a man falls down immediately. If there is a mixture of oxygen he might live 5 or 6 or 7 minutes until he becomes poisoned.

Mr. Bull.] Would you say what effect it would have upon the hair of the head? No effect at all. Of course everything depends upon the heat with it.

The oxide would have no effect upon the hair itself? Not knowing the appearance of the men of course I cannot tell.

But was not the hair of these men shorter than you would expect to see it? Well, if I were a miner myself I would have my hair cropped very short.

Had the hair the appearance of burning? I did not pay minute attention to it; I wanted to find out what the men died from. If there had been a flash of fire I think there would be bound to be obvious indications.

You said the hair was well coated with coal-dust? Yes; but the faces after being washed presented no appearances of burning.

But would not a coating of coal-dust protect the body? It would be a safeguard.

Mr. Gibson.] Have you had any experience in mining accidents? Yes; and I have seen men burned in the fourth degree, and I can tell the effects of strong burning immediately. I never saw anything of the kind on these bodies.

Is there any difficulty in persons who have seen bodies burned to tell whether these bodies were burned or not? If a man is burned after death the appearances are different; but I should not like to take the evidence of any man as to burning, unless he were a medical man.

Is it not a fact that numbers of bodies have been thought to be very seriously burned—from the general appearances—and yet have not been burned at all? I have not heard of it.

Mr. Bull.] I suppose a body that was burned would have a strong smell of fire? No; there would be no smell.

But you made a mistake at first? Yes, I did, about the hair.

Was it not the appearance of the hair itself which misled you? Yes.

What impression did you form when you first saw the hair? Well, the hair was very short, and it appeared as if it had been singed. I thought so until I pondered and thought well over the matter, when I came to the conclusion which I have given you.

Mr. Wallace.] If you had not thought the matter out and seen that the condition of these bodies negatived the idea of burning, you might have remained under that impression? Quite so.

APPENDIX No. 8.

The Examiner of Coal Fields to The Under Secretary for Mines.

Reports on the explosion at Bulli Colliery by the Examiner of Coal Fields.

Sir, Mining Department, 30 April, 1887.

About 2·30 p.m., on 23rd of March last an explosion occurred in the workings of the No. 1, or 7 feet, coal-seam at Bulli Colliery, which I regret to say has resulted in the death of eighty-one persons.

This is the greatest number of lives that has ever been lost in a colliery accident in New South Wales, the largest number in any previous accident having been five.

I have made several examinations of the workings, with a view of ascertaining the cause of this terrible disaster, and I have also heard the evidence given at the public inquiry in the Oddfellows' Hall, Bulli, and, having considered all the circumstances, I now submit the following report for the information of the Honorable the Secretary for Mines.

The Bulli Colliery is situated about 8 miles from Wollongong Harbour and 1½ mile from the Bulli jetty. It belongs to the Bulli Coal Company (Limited), and is under the care and direction of Mr. George Hamilton, Manager, and Mr. Alexander Ross, Colliery Manager.

The mine was commenced to be opened out in 1863, and since then to the present time 1,794,685 tons of coal have been raised from the No. 1, or 7 feet, coal seam. The coal is won and wrought by two adits driven into the coal seam, facing the Pacific Ocean, on the Illawarra Ranges, at a height of about 400 feet above sea level, which adits intercommunicate with each other, and by means of either of which openings all persons employed in the colliery may at all times pass in or out.

Area of the coal workings.

The coal workings cover an area of about 588 statute acres, and the coal has been wrought by the pillar and stall system.

Ventilation of the Mine by the old furnace.

The mine was, previous to November, 1885, ventilated by a furnace capable of producing 17,000 cubic feet of air per minute, situated about 55 yards, in a direct line, from the entrance of No. 2 adit (*vide* C on plan) and about 1,960 yards from the far end of the Western and Hill End district workings, where on August 5th and 9th last Inspector Rowan reported that in the Hill End district the miners were working with safety-lamps, "as the coal gives a small portion of fire-damp;" that strict discipline was exercised by the management to ensure safety, the bords being examined by a competent person and reported to be safe before the miners commenced work; and that he (Rowan) examined every bord with a safety-lamp, but in no case did the fire explode in the lamp, and also asked the miners if they considered every care was taken; they replied that they believed so, and that the Deputy (Crawford) made several inspections during the day.

On 20th October last Inspector Rowan made another examination of the workings, and reported to me, "that heavy falls of roof had taken place in the 'return air-ways, also in Harris's heading'" (Grip). In this heading, where about forty men were employed, the manager had lifted all the plant, as there was no possible way of keeping the roads in order, in consequence of it having a very bad roof and requiring a constant staff of day men to keep it in repair; that the Manager informed him that at the commencement of the strike all the "day men and deputies' struck work along with the miners, thus leaving him without a man; the underground furnace-man also left, and it was with difficulty he found a person to fill his place; and that, as he stated in his previous report, the new air-course which was being constructed would have been completed if it had not also been at a standstill for want of workmen.

Ventilation of the Mine by the new furnace.

On 22nd December last Inspector Rowan reported that the new ventilating furnace was finished and in working order, and that on the 20th idem he examined the division of the Hill End workings which formerly generated fire-damp, and where the men when working had locked safety lamps; that he examined the district with a safety-lamp, and found the same clear of fire-damp or any foul gases; that he could not pass through the other two divisions of workings (western and grip) on account of heavy falls of roof, especially in the "return air-ways," and drew Mr. Ross's attention to their condition, when he promised to get men to keep them in order, as they were constantly falling; that Mr. Ross said he would put the air-ways in order when the strike was settled, and concluded by saying that the new furnace was finished and in working order.

On March 2nd Inspector Rowan reported that he had made an examination of the mine on the 17th ultimo, and found fifty men employed, four of them in narrow headings, working with safety-lamps, owing to "the coal giving off a small percentage of fire-damp"; that he carefully examined this division of the workings and found the ventilation good in every bord, 12,000 cubic feet of air per minute being brought up to within 20 yards of the furthest in-working place; that on examining the return air-way, he found heavy falls of coal had taken place, which falls he could not make a passage through, and that he drew the Manager's attention to the matter, who said he had three shifts of men at work making a new air-course, and that they would be kept at work until a proper recognized air-way was made from the working places to the ventilating furnace; that, as formerly reported by him, a number of the falls took place during the recent strike; also, that Harris's heading (grip district), where forty men were employed previous to the strike, was completely crushed, caused by the bottoms heaving, and that the bords would require to be cut out anew, with a pair of headings; no men have been working in Harris's heading since the strike.

On 15th March I went with Inspector Rowan for the purpose of examining the workings where the Company had been extracting coal from under Crown Lands in the western district, measuring the thickness of the coal so taken out, seeing the new furnace, measuring the currents of air, and to see anything that Inspector Rowan deemed it necessary for me to see. I asked him and Mr. Ross about the small

small quantity of explosive gas he had reported to me in the Hill End district, and they said that on account of the pit being at work I should not be able to detect any with a safety-lamp, and from what I have since seen in the Nos. 1 and 2 headings I have no reason to doubt it. We found 30,000 cubic feet of air per minute circulating through the western district workings, and 24,000 through the Hill End, or a total of 54,000 cubic feet of air per minute passing up the furnace shaft, the furnace not being full on at the time.

Since the strike, and at the time of the explosion, the air was distributed to the men, boys, and horses in the following manner:—At about 100 yards from No. 2 tunnel mouth the intake air is split, one portion of it goes into the mine by the main heading incline plane, and the other by the slackey heading (*vide* A on plan), which latter is connected with the former by a cross-cut lettered B at about 600 yards from the tunnel entrance. From this cross-cut the air travels up the incline plane heading in one current for a distance of about 760 yards, where it is again split, a portion of it passing through a regulating door into the western district, and the remainder along the incline plane and main heading, and through the Hill End headings and bords in the Hill End district.

At the time of Inspector Rowan's visits, previous to and since the strike, the requirements of the Coal-mines Regulation Act, so far as a sufficiency of ventilation is concerned, have been complied with.

When and where gas was first met with in the gassy or Hill End district.

Carburetted hydrogen gas (fire-damp) was first seen in the Hill End district about two years ago, when crossing a "dyke" in the main heading incline plane, at about 1,800 yards (*vide* D on plan) from the No. 2 tunnel mouth, and 220 yards from the far end of the Hill End district and the Nos. 1 and 2 headings. Since then gas has been reported to me in small quantities by Inspector Rowan.

Lights used in the Mine at the time of the explosion.

Naked lights were used in the whole of the workings with the exception of a few places past the dyke in the Hill End district, viz., 1, 2, 3, 4, 5, and 6 headings, where, according to Ross (manager), White (overman), and Inspector Rowan, small quantities of fire-damp had been found, and the men worked with Davy-lamps, all of which should have been, but appear not to have been, locked. Mr. Rowan, in his report of 2nd September, when the old furnace was at work, says he carefully examined every bord with a safety-lamp, and that in none of them did the fire explode in the lamp.

Disregard of General and Special Rules by the Management.

From the evidence of Deputy Crawford and others it appears that, previous to the strike, when Crawford was deputy, the provisions of sub-section 7, section 12, of the Coal-mines Regulation Act, referring to locked safety-lamps, and special rule 4, with respect to no person entering his working place until it had been examined, appear to have been strictly carried out by the management, and the men worked with Davy-lamps in the bords of Nos. 1 and 2 headings, as well as in the headings, which places were examined every morning by Crawford, and reported by him to the men to be safe before they commenced work. Danger signals were also placed at a proper distance from the working places where gas was found to exist.

Since the strike, and after Millwood was appointed deputy, great laxity of the regulations appear evidently to have prevailed, and from the evidence given at the Inquiry there is no doubt that the provisions of sub-section 7, section 12, of the Coal-mines Regulation Act, and special rules 3 and 4, have not been complied with by the management, inasmuch as there was no back overman for the night-shift, and the persons employed in the mine were allowed to go into their working places without an examination of them having been made by the overman or deputy previous to commencing their daily work.

Section 15 of the Coal-mines Regulation Act, which requires a printed copy of the general and special rules to be supplied to every person before he is employed in the mine, has also not been complied with by the management, and a bord and a heading had been driven 43 yards and 40 yards respectively, before the current of air, without a cut-through having been put through, or the places bratticed up within 3 yards of the face, as required by sub-section 4, section 12, of the Coal-mines Regulation Act. This took place after the date of Inspector Rowan's last report.

Disregard of General and Special Rules by persons employed in the Mine.

From the evidence of miners who were employed in the Nos. 1 and 2 headings it is very evident that there was great recklessness displayed by many persons working in the Hill End district, that they disregarded some of the special rules, &c., and committed breaches of:—

Special rule 15, in not reporting the discharges of gas they say they found, and immediately leaving their working-places when finding it, and reporting it to the overman.

Special rule 16, in taking Davy-lamps into the mine without their having been locked by the overman or deputy.

Special rule 17, in not informing the overman or other officer in charge of the danger anticipated by them.

And of general rule 4 of the Coal-mines Regulation Act, for driving a bord and a heading more than 35 yards before the current of air.

Mr. J. B. Nicholson, the Miners' Secretary, did not report to the Miners or others the danger anticipated by him.

J. B. Nicholson, in his evidence, said that he had a conversation with Westwood, a miner, ten days before the explosion, when Westwood told him he had struck a heavy blower in No. 2 heading, and that he could hear it humming 100 yards from the face.

That

That he asked Westwood if the men in the bords were working with naked lights, having heard they were, and upon his saying that they were, he replied, "God help you ; one of these days you will get it." And that he inferred from what Westwood said that the lives of many in the pit were in danger, but did not report it to the manager or Government officials, and took no steps to make the matter known.

Appearance of the explosion at Tunnel mouth, and in the Mine.

According to Alexander Lang, screenman, &c., who was near the mouth of No. 2 heading at 2·30 p.m., the appearance of the explosion at the tunnel mouth was a blast of air accompanied by coal-dust, and a sound as if several skips had broken away, and immediately after the first blast came a second and third, accompanied by smoke. He also saw a boy named Cope staggering out of the tunnel, with his hands to his head, crying out for his mother. About a quarter of an hour afterwards a horse, which the lad was driving, from the bottom of the Hill End incline plane to the mouth of the tunnel, came out of the mine with his mane, ears, and the hair under his tail singed.

I arrived at the mine about 10 a.m. on the 24th of March, and after putting in an appearance at the inquiry then being held by Mr. Smith, the Coroner, I went to the Colliery office, and after seeing the working plan, and ascertaining how the air was being conducted to the Hill End and Western districts by the exploring parties, I went into the mine with Inspector Rowan, Mr. Ross (Bulli Colliery Company's manager), and Mr. Neilson (Newcastle Wallsend Colliery manager), and proceeded to the new furnace to see if there were any signs of gas having fired at the furnace, measured the return air coming from the Hill End, Western, and Grip districts, and then went to the entrance of the Western and into the Hill End district. In the No. 1 Hill End heading we found Mr. McCabe, manager of Mount Kiera Colliery, with a gang of men clearing out the foul air, and saw sixteen dead bodies of miners who had fallen down when running out of their bords, a distance of 20 to 30 yards. We then returned to the surface, it being impossible at that time to go any further until the ventilation was restored in the far end of the Hill End district.

On Saturday, the 26th of March, I made an examination of the mine with Inspectors Dixon, Rowan, and Bates, Mr. Ross, Mr. McCabe, Mr. Neilson, Mr. Ross, junior, and Mr. Gardiner, my object being to view the mine under the guidance of, and with the information provided by the colliery managers who had been engaged in directing the operations of the exploring parties, and, if possible, to arrive at the probable cause of this sad disaster and locate the seat thereof.

After measuring the intake and return air-ways, we proceeded to the No. 1 and 2 Hill End headings, where we saw two stoppings partly blown out, examined with safety-lamps the face of all the bords on the right-hand side of the No. 1 heading, and in the latter place we found a coil of fuse within 7 yards of the face, a plug of compressed powder, and a Davy-lamp. From the face of the No. 1 heading we also found 8 yards in length and about 1 foot in depth of explosive gas, and from the face of No. 2, 12 yards in length and about 18 inches in depth of explosive gas. The current of air travelling through the stenton, which is 20 yards from the face of the headings, was about 4,680 cubic feet per minute, and when Mr. Rowan inspected it on February 17th last, there was 12,000 cubic feet of air per minute passing up the No. 1 heading, through the stenton, and down the No. 2 heading ; and if there had been the same current of air on the 26th of March there would not have been as much explosive gas to be seen, which was only a small quantity, diluted with fresh air, and could not, in my opinion, unless aided by "coal-dust," have caused such destruction in the Hill End headings, bords, and main headings, &c. From there we examined with a Davy-lamp the face of all the bords on the left-hand side of No. 2 heading, and with it saw no trace of explosive gas.

In the bords of No. 2 heading the props for a depth of 18 inches to 2 feet from the roof were charred and burnt, and coked coal-dust was on some of the props and in skips, of a set of skips, which had been much knocked about in the first bord of No. 2 heading. From here we went to the far end of the Hill End and Western districts.

My attention having been drawn to the blocking up of the Hill End main incline plane, between the "cross-cut" lettered B and mouth of the tunnel, which place we did not examine or go into on the 26th of March, I made an inspection of it on the morning of April 15th, and from that examination I am of opinion that there were two explosions, and that the first occurred at E on plan, about 374 yards from the No. 2 tunnel mouth, where there are heavy falls in the heading for a distance of 165 yards, and great wreckage of timber, pulley wheels. The bark on the props exhibits signs of a fierce blast in a north-western direction, towards Hill End, and on the opposite side of E there has been a similar wreckage in a contrary direction, viz., towards the tunnel mouth and in a south-easterly direction.

Powder unburnt in No. 1.

And I further believe that the second explosion occurred in the Nos. 2 and 1 headings of the Hill End district and was the result of the former. This, however, the Royal Commission, now appointed to inquire into the causes of the explosion, &c., may be enabled to throw further light upon.

Recommendations as to future mode of working, &c.

Keeping in view the present great calamity, I recommend that the former mode of working with naked lights in the Hill End district be discontinued, and that the headings be bratticed up to within 3 yards of the face, and that a more judicious system of ventilation be adopted by having double doors instead of one, doing away with the doors where possible, and constructing overcasts in their stead.

And in conclusion would add that I consider it was most injudicious to work with naked lights in the bords of Nos. 1 and 2 headings, especially in those of No. 2, when it was found necessary to use safety-lamps at the face of the headings, and that a system of locking should have been adopted similar to that in operation in all well-regulated collieries.

I have, &c.,
JOHN MACKENZIE, F.G.S.,
Examiner of Coal Fields.

APPENDIX

APPENDIX No. 9.

The Under Secretary for Mines to The Secretary Bulli Inquiry Commission.

Analyses of coal-dust collected by members of the Commission.

Department of Mines, Geological Survey Branch,
2 July, 1887.

Sir,

I have the honor to inform you that the samples of coal, taken from the Bulli mine, submitted by you, have been analysed, with the following result :—

No.	Description.	Moisture.	Volatile Hydrocarbon.	Fixed Carbon.	Ash.	Sulphur.	Specific Gravity.	Coke. %
1 From wheel bend of main tunnel, about chains from entrance.	Fine brown and black coal-dust, and small pieces (¼ inch diameter) of bright bituminous coal, together with small pieces of wood and clay-shale, as though the whole had been scraped up from the ground.	2·15	19·02	48·92	29·39	0·52	1·52	78·31
2 From top of a fallen prop chains from entrance.	Very fine brown and black bituminous coal-dust and a little sand.	2·40	16·30	50·43	30·24	0·63	.....	80·67
3 From main road 40 yds. from No. 1 heading.	Same as No. 2, with a few stringy splinters of wood.	2·25	16·45	51·27	29·50	0·53	.....	80·77
4 From No. 1 heading from shelf on coal near No. 4 bord.	Fine dust and pieces of bituminous coal up to ⅛ inch diameter.	1·40	19·00	55·37	23·70	0·53	.....	79·07
5 From No. 2 bord, No. 2 heading.	Dust of bright bituminous coal and pieces of the same up to ¼ inch in diameter, with a little quartz sand.	1·46	19·14	51·94	26·91	0·55	.....	78·85
6 From half-way down No. 2 heading.	Coarse and fine dust of bright bituminous coal and small pieces of clay-shale.	1·40	20·25	51·90	25·81	0·64	1·480	77·71
7 From recess in coal near face of tunnel, Hill End.	Fine and coarse dust of bright bituminous coal, and a few pieces of the same up to ½ inch diameter.	1·98	16·87	57·32	23·25	0·58	.....	80·57

Remarks.—All these samples were received in fine powder, and contained much dirt; in one or two of the samples pieces of wood were visible. This will account for the high percentage of ash obtained. The colour of the ashes was from white to gray. Where the specific gravity of the sample is not given there was not a sufficient quantity of the sample left after analyses for that purpose. The samples were rather small for analysis.

I have, &c.,
GERARD E. HERRING,
(For Under Secretary).

APPENDIX No. 10.

Copies of General and Special Rules in force at the Bulli Colliery.

RULES FOR THE BULLI COLLIERY.

Department of Lands, Sydney, 20 February, 1866.

The undermentioned Rules, to be observed in the Bulli Colliery, having been approved by His Excellency the Governor, with the advice of the Executive Council, are now published in conformity with the provisions of the Coal-fields Regulation Act of 1862.

J. BOWIE WILSON.

General rules to be observed in every Colliery in the Colony of New South Wales under the Coal-fields Regulation Act of 1862, being 26 Victoria No. 17.

1. Within one year and six months after commencing the workings of any bord, stalls, or longwall workings in any colliery, there shall be made and completed at least two separate and distinct openings to the day or surface of the colliery, intercommunicating with each other by means of either of which openings all persons employed in the colliery may at all times whatsoever pass in or out, provided that, if in any colliery, such bords, stalls, or longwall workings shall have been commenced before the passing of the Act; and without a second such opening as aforesaid, the same shall be completed at or before the termination of the year 1863; and the owner of every colliery, wherein such two openings shall not be completed as aforesaid, shall be liable to a penalty not exceeding one hundred pounds (£100) for every month during which the same shall remain incompleted.

2. Ventilation shall be constantly produced of adequate amount to dilute and render harmless all noxious gases, and to such an extent that all working places of the pits, levels, and workings of the colliery, and the travelling roads to and from such working places shall be so ventilated, except in the cases of such colliery being abandoned, as herein before referred to.

3. All entrances to any place not in actual working and extension, and suspected to contain or be liable to engender dangerous gas of any kind, shall be properly walled or fenced off so as to prevent access thereto.

4. Whenever any safety-lamp is required to be used, it shall be first examined and securely locked by some person duly authorized for that purpose, who shall keep the key thereof.

5. Every shaft or pit, which is not in use or used only as an air-pit, shall be securely fenced.

6. Every working or pumping pit or shaft shall be properly fenced when operations shall have ceased or been suspended.

7. Every working or pumping pit or shaft, where the natural strata are not safe, shall be securely cased or lined or otherwise made secure.

8. Every pit or shaft shall be provided with some proper means of communicating distinct and definite signals from the bottom of the shaft to the surface, and from the surface of the shaft to the bottom.

9.

9. All underground self-acting and engine planes on which persons travel shall be provided with some proper means of signalling between the stopping place and the end of the planes, and with sufficient places of refuge at the sides of such planes at intervals of not more than 20 yards.

10. A sufficient cover over head shall be used when lowering or raising persons in every working, pit, or shaft.

11. No single-linked chain shall be used for lowering or raising persons in any working, pit, or shaft, and no material shall be lowered or raised in the cage with any person.

12. Flanges or horns, of sufficient length or diameter, shall be attached to the drum of every machine used for lowering or raising persons.

13. A proper indicator, to show the position of the load in the pit or shaft, and also an adequate break shall be attached to every machine worked by steam or water power, used for lowering or raising persons.

14. Every steam-boiler shall be provided with a proper steam-gauge, water-gauge, and safety valve.

15. The fly-wheel of every engine shall be securely fenced.

16. Sufficient boreholes shall be kept in advance, and on both sides, to prevent inundations in every working approaching a place likely to contain a dangerous accumulation of water.

17. Every examiner and inspector taking any copy or transcript of any plan of a colliery, as aforesaid, and of the workings thereof, accompanied or not by any observations and documents explanatory thereof, or applicable thereto, shall, from time to time hand over the same to the keeper of mining records, by whom they shall be kept as of record ; provided that no such keeper of mining records shall furnish any copy or tracing of any such plan, or permit the same to be open to public inspection.

Department of Mines, Sydney, 27th June, 1877.

SPECIAL RULES FOR THE BULLI COLLIERY.

THE undermentioned Special Rules to be observed at the Bulli Colliery, in the District of Wollongong, are now published in conformity with the provisions of the Coal Mines Regulation Act, 1876, 39 Victoria No. 31.

GEO. A. LLOYD.

Special Rules for the conduct and guidance of persons acting in the management of the Bulli Colliery, in the District of Wollongong, and all persons engaged in or about the same.

1. One or more copies of these rules shall be fixed up in the principal office at the colliery, and all persons accepting employment in such colliery shall be engaged subject to the regulations contained in them. A printed copy of the rules shall be supplied to every person before he is engaged in or about such colliery.

Manager.

2. The Colliery Manager shall have full command over all other officers and persons employed in the colliery who shall receive their orders from him, and apply to him, or to such other person as may be appointed to act on his behalf, for instructions as often as may be necessary, and he shall, either by his deputy or some other person appointed for that purpose, take care that the following duties are duly performed.

Overman.

3. The responsible charge of the mine shall be with the overman and back overman, in their respective shifts, who are to see that the Rules in the different departments are closely and rigidly carried out, and suspend anyone infringing any rule. The back overman shall see all men and boys out of the mine safely, and all lights extinguished, and he and the deputies shall give a daily report of the proceedings to the overman, who shall report to the manager the result of each day's labour.

4. No workman or boy shall enter any working place until it has been examined by the overman or other person duly appointed, whose duty it is to make such examination before work is commenced, to ascertain that the place is properly ventilated and provided with sufficient props and timber, and until such examination shall be made and leave given, no workman or boy shall go beyond the flat or other station appointed by the overman. If, on examination, any working place is found insecure from a defect in ventilation or from insufficiency of props or timber, work shall not be commenced there until the insecurity is remedied. And if, in the course of being worked, any place prove insecure from any of the causes above mentioned, the overman or other person appointed shall, if he think necessary, stop the working there and remove the workmen. Immediately upon doing so, he shall cause a danger signal or "danger cross" to be erected across the entrance of the place, beyond which no person shall go on any pretext whatever, unless duly authorized so to do. No workman or boy shall, unless duly authorized to, go into any part of the mine excepting that to which he is appointed by the overman or other officers.

Waggonways and Tramways.

5. All waggonways and tramways shall be kept in a proper working state by the persons in charge of them, to whom it is a special instruction to secure them properly. No person except the driver or persons in charge of the setts, or those whom the manager may permit, shall ride in or out of the setts

Timbers and props.

6. The overman shall see that a sufficent quantity of timber and props are sent into the pit and into the several flats when needed. Any workman finding an insufficiency of props, and his place unsafe for the want of them, he shall stop work at once, leave the place, and report it to the overman, in order that props may be supplied. The workman must then first secure his place before again commencing work. Every working place shall be sufficiently timbered by the hewer in such place.

Waste.

7. The waste shall be examined from time to time by the master wasteman and other wastemen, who shall report its condition to the manager. The intake and return currents shall be carefully examined every morning by the overman or master wasteman, and if any deficiency of ventilation be experienced he shall ascertain the cause of such deficiency and take proper steps to have it remedied. He shall keep the air-courses in a proper state and of sufficient area ; and if any part of the waste be foul, he shall inform the viewer of the same. The overman and other officials shall travel the air-courses with the master or other wastemen occassionally, in order to make themselves acquainted with the same.

Ventilation.

8. The overman shall examine the main air-courses every morning and every evening, and report any defect they may notice to the master wasteman, who shall remove any obstruction in the air-courses as soon as possible.

Machinery.

9. The pit ropes and chains, with the several bolts, shackles, springs, and cages, shall be examined by the banksman twice a day as they pass slowly for the purpose from the engine. If found faulty in any respect, he shall immediately report the same to the engineer ; and if any defect be found in either rope or the apparatus connected therewith the banksman and onsetter shall reduce the number of men using that rope, or restrict them to the use of the better rope until the requisite repair or removal shall be made. The engine and machinery shall be examined by the engineer once a day. The brakesman, banksman, and onsetters shall make themselves thoroughly acquainted with the signals, and should any signal not be thorougly understood the engine must remain at rest or be stopped until a properly understood signal shall be given. The brakesman shall not on any account leave the handles while the engine is in motion ; and no other person shall be taught the duty of brakesman, or allowed to touch the handles of the engine without authority of the manager. The fireman shall be under the control of the brakesman, who shall not allow an apprentice to be left in charge of the engine nor to move it, except in his presence, until such apprentice shall have obtained a certificate of competency from the engineer. If any part of the engine or machinery be at any time found unsafe, the brakesman shall immediately give notice thereof to the engineer, with a view to the same being at once repaired. The brakesman shall exercise the greatest care while lowering or raising men out of the pit. The machinery upon the colliery, with its appendages above ground and below, is under the special charge of the engineer, who shall examine once a day the pits, ropes, guides, cages, and chains, and all other apparatus belonging thereto, the renewing and repairs of which at all times are under his direction.

Shafts.

Shafts.

10. No person shall be allowed to descend the pit without permission from the manager. It is the duty of the brakesman to see that this rule is attended to, and that no workman or other person goes down in a state of intoxication. No ale, spirits, or other intoxicating drinks shall be taken down or consumed in the pit without permission of the manager, who is only to give such permission in cases of necessity. The number of persons allowed to descend or ascend at one time will be prescribed by the manager. When men are to ride, the onsetter, or other person appointed, shall alone give the signal. No person shall ride on a full tub, or on the cage top. While men or boys are riding, a banksman shall remain next the signal-rope, lest an accident should happen. The onsetter shall work the signal himself, and not allow any other person to do so. The back overman, banksman, and onsetter shall remain in attendance where their respective duties require them after work in the pit has ceased, and until all the men and boys are out of the pit.

Stoppings.

11. It is the duty of the master wastemen to examine and keep in repair all the stoppings and air-crossings in the waste, and it is the duty of the overman to examine and keep in repair all the stoppings and air-crossings in the workings. The master wasteman is to examine all regulating stoppings, and to see that the same are kept locked, and no one else shall interfere with them.

Brattice.

12. Whenever brattice is necessary, it must be set up and kept in proper repair by the persons duly appointed, and they must examine the same daily.

Doors.

13. The main and other ventilating doors shall be examined daily by the overman ; no door shall be propped open or fastened back whilst on its hinges ; doors, giving access to waste, and separating the fresh from the return air-current, shall be kept securely locked by the master wasteman. The persons appointed to set doors necessary for the ventilation of the mine shall keep the same in proper repair, and see that all doors are so hung as not to stand open of themselves.

Furnace.

14. The ventilating furnace shall be kept clean by each furnace man in his shift, and supplied by him with a sufficient quantity of coal. The furnace man shall change at the furnace, so that some person be always in attendance, and no slackening of the fire be occasioned by absence. The master wasteman shall be responsible for the clearing out of the furnace drift when requisite, and he shall travel occasionally the air-ward at each side of the furnace. The furnace man shall frequently observe the velocity of the air-current, and should the indicator not show the requisite number of revolutions, he shall immediately fire the furnace so as to gain an increased amount of heat.

Fire-damp.

15. Should fire-damp be found in any place in the pit where naked lights are used, a danger signal must be set up across the entrance to such place, beyond which no person must go (except those authorized to examine and remove the evil) until the place is restored to its proper working order, and permission given. Should any unexpected discharge of gas occur, the overman must order all naked lights to be extinguished, withdraw the men and boys, and make the manager acquainted with the case, in order that the evil may be remedied, and the places restored to their proper working order. Hewers and others, when using naked lights, are strictly cautioned against the discharge of gas, where faults, rolls, and backs are met with, and on its appearance, they shall immediately leave the place and report to the overman, and shall on no account return to the place without proper authority.

Safety-lamps.

16. Should it be necessary to use safety-lamps in any portion of the pit, stations will be fixed upon, and proper notice-boards erected, beyond which no person, under any pretence whatever, shall take any naked lights, pipes, or matches. From these stations no person is allowed to take a safety-lamp to use in the pillar-workings, broken or waste, without it having been first examined and securely locked by the overman or other person appointed. None but the overman or other person authorized shall carry a safety-lamp key. Should any accident happen to the lamp by which the gauze is injured, or the oil spilt on the gauze, or the lamp is in any way rendered unsafe, the person using such lamp shall immediately pull the wick down carefully, and take the lamp out to the nearest station. Any person using a safety-lamp must clean the same every day after work-hours ; but should it require repairs, it must be taken to the proper authority No safety-lamp shall be used within 2 feet of the swing of the pick or other implement.

General Instructions.

17. Any person observing any door standing open, or any stoppings injured, or any other thing whereby the ventilation of the mine or its safety in other respects may be affected, shall immediately inform the overman or other officer in charge of the pit, so that there may be as little delay as possible in applying a remedy. No person acting in a place of trust shall depute anyone to do his work without the sanction of the manager. It is particularly enjoined upon the overman, engineer, and all other officers, to acquaint themselves with the foregoing rules and regulations, and to enforce and observe the same throughout the various departments. Workmen and boys are also required to inform themselves of the rules. Each workman shall be furnished with a printed copy of them, which shall be taken care of and produced when asked for ; the loss thereof will be considered a delinquency. Officers and heads of departments who fail in the due and right observance of the rules, or in enforcing the same for the safety of the mine and the workmen, render themselves liable to degradation from their respective ranks. Workmen and boys who neglect the rules, or refuse obedience to the officers, shall be sent out of the mine, with a view to the investigation of the case and the punishment of the offender.

18. Every person who pulls down, injures, or defaces any notice hung up or affixed as required by this Act, shall for every such offence be liable to a penalty not exceeding forty shillings (£2).

A. ROSS,
Colliery Manager.

N.B.—By the 34th clause of the 39th Victoria, No. 31, it is enacted :—Every person who shall be guilty of any offence against this Act, or who shall wilfully violate or neglect to observe any provision of this Act, or any general or special rule established hereby or hereunder for the violation or neglect of which no penalty is hereby expressly imposed, shall for every such offence be liable to a penalty not exceeding ten pounds (£10), recoverable summarily before two or more Justices of the Peace. By the 33rd clause of the same Act it is enacted : Every person who pulls down, injures, or defaces any notice hung up or affixed as required by this Act, shall for every such offence be liable to a penalty not exceeding forty shillings (£2).

GEO. HAMILTON,
Manager.

B.C.M. Co.'s Offices, Exchange, Sydney,
1st August, 1877.

APPENDIX No. 11.

Copy of Engagement Rules.

BULLI COLLIERY.

RULES of employment, and rates for hewing coal, and yardage, &c., at the Bulli Colliery.

Engagement.

1. All persons accepting engagement in or about Bulli Colliery, shall do so subject to the following rules, rates, and conditions, and also to the general and special rules approved by the Executive Council, which a copy shall be supplied to each employee on attaching his signature hereto, and shall be bound hereby and thereby.

Time of labour.

2. Except in cases of sickness, or some cause which the colliery manager can accept as sufficient, miners, or other employees shall, if required, work regularly eleven (11) full days, of not over nine working hours each (unless specially and mutually arranged) in every fortnight or pay. Any employee absenting himself from work, without giving a sufficient reason, will be liable to dismissal without notice, and to prosecution for breach of agreement under the Masters and Servants Act.

Absence

Absence from regular duties.

3. Any miner or other employee found in any part of the mine or colliery other than that in which he should be working without the consent of the colliery manager, shall be liable to dismissal without notice.

Notice from and to employees.

4. Every miner or other employee shall give to the colliery manager fourteen (14) days' notice before leaving the Company's employment, or absenting himself from work for more than two (2) days (not necessarily consecutive) during any fortnight, unless leave has been granted; and on the other hand, except as otherwise provided, for infringement of rules, every employee shall receive fourteen (14) days' notice before his employment can be terminated by the colliery manager. Any employee leaving without giving due notice, shall forfeit any wages then standing in his name.

Control.

5. The colliery manager shall have full command over all employees in or about this colliery. They shall apply to, and take their orders and instructions from, him or such other person as may be appointed to act on his behalf.

Interference by employees.

6. Any employee interfering in any way with the orders issued by the colliery manager or his overman for regulating the work of the mine shall be liable to dismissal without notice.

Right to enter mine.

7. No person other than those immediately connected with the mine shall be allowed on any pretext whatever to enter same, unless by written consent of the colliery manager.

Pay day.

8. The pay day shall be on a Saturday in each fortnight as heretofore.

Hewing rates, yardage, &c.

9. The rates for hewing coal, compensation for yard-work, turning off bords, and small coal which cannot be thrown back shall be as follows :—

"Bulli" seam.	s.	d.	
Hewing (screened) coal	2	4	per ton.
Extra where Davy-lamps are used	0	3	,,
Driving headings 6 feet wide	3	8	per yard.
Turning off bords, from 2 yards to 8 yards	8	0	per bord.
Small coal	0	9	per skip.

"4-feet" seam.	s.	d.	
Hewing (screened) coal	2	10	per ton.
Driving headings 6 feet wide	3	3	per yard.
Driving headings 9 feet wide	2	6	,,
Driving headings 12 feet wide	1	6	,,
Small coal	0	8	per skip.

Day or other wages.

10. Rates of day or other wages not specified in foregoing shall be as per arrangement made at time of engagement and set forth on this sheet, and initialled by colliery manager.

Wheeling and prop-cutting.

11. The hewer or hewers in each bord shall wheel his or their full or empty skips any distance not exceeding 50 yards from the working face free of any expense to the Bulli Company. The hewer or hewers shall set the necessary props, lay the rail after the turn is laid, and keep his place secure from the spot where he commences such place after balloting to the face of coal, and before leaving that place at following ballot.

Partners at work.

12. Unless otherwise arranged, each working place shall be occupied by two hewers, who will be considered to work as partners during the term of cavil. The signature of either partner, shall be a full and sufficient discharge for wages due by the Company to both parties. Any miner who for good and sufficient reason suspects the integrity of his partner, will so far as is possible be protected by the colliery manager, on the latter receiving in good time a written order to retain his half of the pay due to both.

The turn.

13. The colliery manager and overman alone shall have control of the turn, and any other person or persons interfering with the turn shall be liable for breach of agreement.

House or land rent.

14. The colliery manager shall deduct from the pay of each employee the rent of any house or land belonging to the Bulli Company, and occupied by such employee.

Doctor's fees.

15. The colliery manager shall have the right to deduct from each pay, employees' levies for their doctor or benefit societies, and his responsibility shall cease upon handing over the sum so deducted to the doctor, or to the secretary or treasurer of such benefit society as the case may be.

Fire coal.

16. The colliery manager shall have power to deduct from an employee's pay the amount due by such employee for fire coal supplied.

Breach of rules.

17. A copy of the foregoing rules, and also the general and special rules referred to therein, shall be fixed up in the office at this colliery, and any and every employee subscribing hereto shall be liable for each breach by action at law.

Bulli, N.S.W., 13th September, 1886. By order of the Board,

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Colliery Manager.

Bulli... ....188 .

I, the undersigned, hereby agree to accept employment from the Bulli Coal-mining Company upon and subject to the rates, conditions, and rules above referred to.

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Addenda to Rule 9.

N.B.—The above hewing rates, &c., have been fixed on an average selling price of 11s. 10d. per ton, and such shall be declared average price for January and July, 1887. Not later than 15th January and July in each succeeding year, the Associated Collieries shall determine what has been the average selling price for the previous half-year, which shall be declared, and the hewing and yardage rates shall be thereby fixed for the then current half-year.

An additional 1d. per ton on the hewing rates, and an additional 1d. per yard on the yardage will be paid to the miners, for every 4d. per ton advance in the price of coal above 11s. 10d., and 1d. per ton and 1d. per yard reduction shall be made in every 4d., the average price is reduced below 11s. 10d.

Sydney: Charles Potter, Government Printer.—1887.

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